The Builder.

VOL. LXX. NO. 2785. JUNE 20, 1896.

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Light Railways.

AT the present day, when the public mind is greatly concerning itself with agricultural depression, and our statesmen are devoting their energies to discussing measures of alleviation, when the laws that compel a man with a red flag to be in attendance on a public road before a mechanically-propelled vehicle are presumably about to be modified, it is but natural that the question of light railways should receive special consideration. Consequently, an exhaustive work upon this subject, such as Mr. J. C. Mackay* has just published, is certain to command the attention of those who have the welfare of the country at heart, and who are anxious to learn if such railways as he describes would really assist agricultural enterprise in the manner so confidently asserted by their advocates.

The author handles his subject in a manner which leaves little doubt as to his own convictions. He sets out with the intention of demonstrating that England is much in need of, and the farmer has much to gain by, the general introduction of light railways and "the welcome sound of the railway whistle," and throughout his pages there is much internal evidence that the book, which abounds in data and statistics, is not simply the work of a compiler. That we do not altogether agree with many of his views is due to facts which, although no doubt familiar to the author, are not dwelt upon. It is certainly not encouraging to find that of the seven English light railways described five cannot pay any interest on their ordinary share capital, three do not even pay their Preference shareholders, and in one case, in which the cost per mile comes well within Mr. Mackay's requirements, the working expenses absorb as much as 96 per cent. of the gross earnings, although the line is twenty-two miles long.

This disastrous state of affairs the author attributes to the "paternal care of the Board of Trade" and our national preference for "something substantial" which has run up the capital account much beyond its legitimate limit. Now, although the Board of Trade has something to answer for, and although the capital account has no doubt been unduly high in several cases, a net earning of 2d., 3d., 4d., and 5d. per train mile respectively cannot be considered as an indication that these are the sole causes of failure. Of the two successful examples, the Festiniog Railway, which is 1 ft. 11½ in. gauge and fourteen miles long, owes its prosperity to the slate industry and a considerable passenger traffic; while the Corris Railway, also in Wales, 2 ft. 3 in. gauge and eleven miles long, having a considerable passenger traffic, earns a dividend of 6½ per cent. by the successful manner in which the working expenses are cut down.

It is of course very true that a great deal can be learnt from failure, and with the advantageous knowledge of what has been done in this as well as in other countries—a knowledge which is rendered easy to a great extent by Mr. Mackay's very complete work, it is possible that the light railway of the future may be more prosperous than that of to-day; but in England the existing facilities afforded by our extensive railway systems have left, it seems to us, very little scope for such railways.

The study of a railway map of England shows how very few towns, or indeed villages, now remain which are as much as eight miles from a station; and even where these occur they are situated for the most part in non-agricultural districts. Thus, for the most part, any new light railway which can be proposed is so cramped and hemmed round by existing main lines, that its area of usefulness is curtailed to an extent that prevents any individual line from being more than ten or twelve miles in length. Of this already too short a distance the first two or three miles cannot be regarded as augmenting the goods traffic or helping the farmer, as he will prefer, for economical reasons, to cart his goods direct to the main line. Under ordinary circumstances each railway undertaking has its own standing staff, its secretary and manager, engineer, directors, &c., &c., all of whom must be paid, and paid very much the same amounts, whether the line is five miles long or fifty; and in consequence a short line (and we contend that only short lines are now generally possible) is very heavily taxed indeed. Thus, either the lines must be worked at a loss, or such heavy rates charged as to defeat their own object. If, therefore, we are to have paying light railways we must have some such system as is adopted in Belgium, where a parent company takes charge of construction, aided by the State. Further, we must arrange so that land may be acquired at a reasonable rate; we must cheapen materially the operations to be gone through in order to acquire the right to construct; we must have amended and relaxed Board of Trade requirements; and finally, we must make a really light railway, not a miniature main line.

But, after all this has been done, will the farmer be much better off? We are inclined to doubt it. We fear that his case, as a class, is not going to be materially improved by such benefit as he may obtain by a cheaper transport, which can only possibly occur in cases where there is also a considerable passenger traffic to swell the receipts of the railway. If cheapness of transport is the panacea which is to bring back prosperity to our agriculturist, then have we not something to hand in the shape of mechanically-driven carts and wagons, which can travel along our existing roads, from the farm-yard direct to the market, without any other expenses than the actual cost of haulage, attendance, and interest on first cost? These must surely be far cheaper than the lightest of light railways, with its incidental paraphernalia and staff. We have not by us any figures showing the actual cost of such mechanically-driven carts, or the expense of working them, if, indeed, such information exists under the circumstances we assume; but the hundreds of horse-drawn wagons which nightly deliver their loads of garden produce to our London markets from distances as great as twenty to twenty-five miles provide an eloquent object lesson on the subject of railway rates and transfer, and there is little doubt but that a motor would do the work in one-third the time and less than half the cost of horses.

Returning to Mr. Mackay's book, we find much information gathered together in a concise form, which will be of service to any one desirous of seriously considering light railways and their application to any individual case. The time-honoured question of gauge is dealt with at some length, the author recommending 2 ft. 6 in. as perhaps

* "Light Railways for the United Kingdom, India, and the Colonies. By J. C. Mackay, Assoc. M.I.C.E. London: Crosby Lockwood & Son. 1896.

the most suitable where a scanty traffic is anticipated, and consequently where the first cost is to be kept at a minimum. It is, however, noteworthy that the cheapest instance given of a light railway is of 4 ft. 8½ in. gauge, it being that of the Wotton Tramway, in Buckinghamshire, which, without land, cost only £1,400 per mile, and which, therefore, compares favourably with the £1,814 per mile of the Corris Railway (2 ft. 3 in. gauge) and £10,727 of the Festiniog Railway (1 ft. 11½ in. gauge). We fear the author, in his eagerness, somewhat under-estimates the cost of transhipment where break of gauge occurs, "which will range," he states, "from 1½d. to 3d. per ton." This may be true if carried out by porters during otherwise idle hours, but, in anything like bulk, we consider 3d. to 6d. as a fairer estimate, 9d. being the amount allowed by the Railway Clearing House. However this is not material, as in most cases the large railway companies are so glad of the traffic that they include the cost of transhipment in their through rate without extra charge.

Useful hints are given as to location and grading, also comparative tables of costs of construction using broad and narrow gauges, in the preparation of which, however, we think the author would have been wiser had he not adopted the recent extremely low prices for rails and fittings, which may lead his readers to under-estimating and disappointment in the future. Full information is also given of suitable instances of light engines and rolling-stock, with their various capacities and probable cost. Treating of working expenses the author urges that most circumstances are favourable to narrow gauge, as not only is the cost of maintenance less, but the proportion of live paying load to dead load is greater, on account of the light stock. An instance is given where it amounted to an average of 43 per cent. of the gross load, which would be reduced to 33 per cent. had our normal gauge stock been employed. If we remember rightly, Sir Benjamin Baker estimated a year or two ago that the average live load carried by the Metropolitan Railway, in its passenger trains, amounted to only 1 per cent. of the total weight of the train. This, however, although of interest, is, of course, an abnormal case. We cannot, however, help being struck with the comparatively high percentage of working expenses on light railways, which are fully 50 per cent. higher than on our main lines. This experience is not confined to England, and thus it may be safely assumed that it is incidental to the circumstances surrounding such railways, when of moderate length.

While touching on working expenses we should perhaps mention the case of the Golden Valley Railway 4 ft. 8½ in. gauge, which was constructed "as a purely agricultural line," and worked by the Great Western Railway at a cost which *exceeded the gross earnings* by 43 per cent., or a dead loss of 6d. per train mile, the goods carried per annum amounting only to 427 tons, although the line is 19 miles in length, and intended as a transporter of agricultural produce.

Dealing with finance, the author has to admit that there is little hope for the extension of light railways without aid from the State or local bodies, an admission which speaks for itself. Turning now to other countries we find that the Isle of Man Railway of 3 ft. gauge and 45 miles in length is a profitable undertaking, a fact mainly due to its large tourist traffic. Similar lines in Ireland, with one exception, share the same fate as those in England. Belgium, with its State and local aid and parent company, has 837 miles of light railway worked for the most part at a moderate profit. Italy affords scope for 1,875 miles of track which pay on an average 4 per cent. on their capital; and Hungary, having 2,333 miles of way, succeeds in paying an average of 3·31 per cent. with the low working expenses of 54·7 per cent. of its receipts. Examples are also given of French, Prussian, Austrian, Mexican, South American, Canadian and Brazilian light railways, the Antofagasta and Bolivia Railway, in Brazil, being perhaps the most interesting, it having a length of 574 miles and being practically a main line of 2 ft. 6 in. gauge. Our Colonies are also cited, and much information is given of a useful character. India is, of course, well represented with its 7,637 miles of metre, and 267 miles of 2 ft. and 2 ft. 6 in. gauge; the Darjeeling Railway 51 miles long and 2 ft. gauge being an interesting example of the adaptation of a light railway to otherwise inaccessible places. With steep gradients and sharp curves, it is built in conjunction with a cart road (the traffic over which it practically monopolises); the worst place is a semicircle 42 ft. radius with a gradient of 1 in 32. In spite of all this, the undertaking pays 8 per cent., in consequence of a large passenger, tea, and general merchandise traffic.

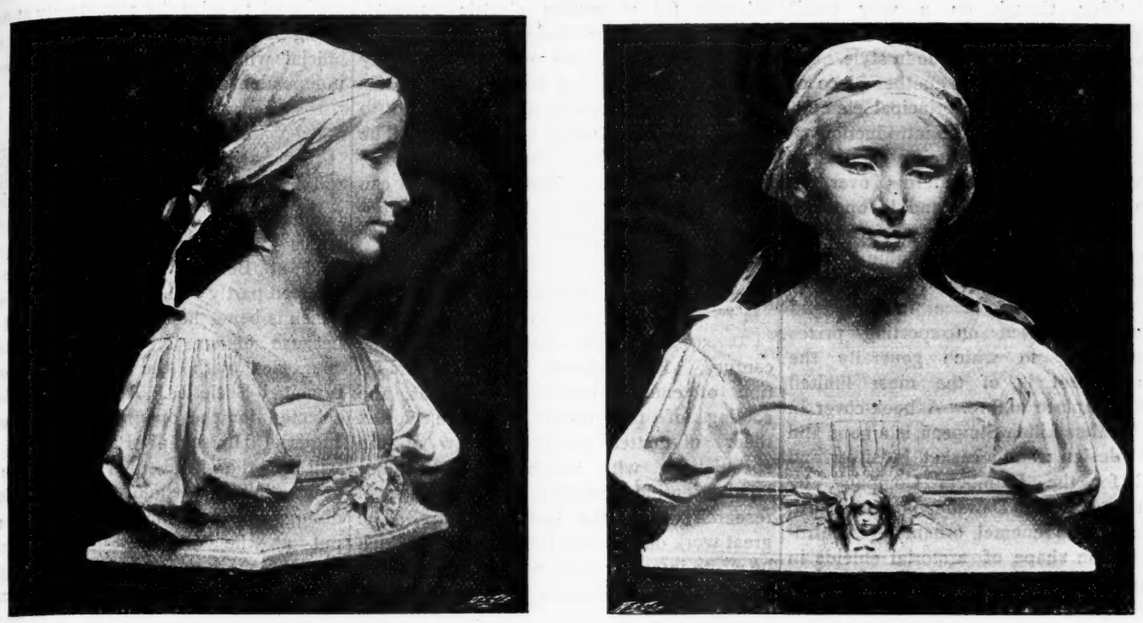
In the appendix will be found many matters of interest, such as reports, Light Railway Bills, &c. The book is fairly up to date and contains numerous illustrations, for the most part reproduced from photographs, and the information is in such a handy form that it constitutes a valuable addition to the literature on the subject.

SCULPTURE AT THE ROYAL ACADEMY.

AS we have already observed (*Builder*, May 9), the most important sculpture work at the Academy is the monument to Lord Roberts in the courtyard, which has already been fully described. Of the sculpture within the walls of Burlington House it may be said that while there is nothing which can be called a great work, there is a considerable variety of interest, and some of the best and most original things are to be found among works on a small scale, which might be easily passed over by a careless visitor.

In the Central Hall the large works are mostly portrait statues, and not very impressive as such. We have Mr. Hope-Pinker's marble statue of Lord Reay, in frock-coat and with a long cloak on, and "supported" (in the composition sense) by a short carved pillar of Hindu detail; and Mr. Furse's statue of the Rev. William Millar, in long gown, to which a certain decorative effect is given by the treatment of the pedestal, supported on rams' heads and horns; whether these are symbolical we know not, but we observe in several instances in the exhibition the attempt to give a decorative effect to a portrait statue or a portrait bust by a special treatment of the supporting portion with symbolical ornament or small figures. This is a very legitimate resource of the sculptor, though in the case of complete figures clad in the modern frock-coat it perhaps even accentuates the unsuitability of everyday modern dress for sculptural treatment. With a mere bust, where details of dress can be avoided if desired, the case is different; the introduction of subsidiary figures or ornament may be so made as to blend very effectively with the portrait head; and this, as we shall see, has been done in several instances among the Academy busts of the year. Mr. Thornycroft's statue of Sir Stewart Colvin Bayley, a model of a marble figure to be erected at Calcutta, is another of the frock-coated productions, which is as dignified in effect as circumstances admit of, but we have a horror of these large statues in modern dress, which seem a peculiarly English form of transgression, and would gladly see the last of them. A symbolical monument, with a portrait medallion, is a far more reasonable and artistic manner of commemorating an eminent man. Mr. Brock's seated figure of the Bishop of Worcester is better, because here the sculptor has the flowing ecclesiastical robes to help him; and the chair is treated so as to assist the decorative effect of the composition.

Among the larger works which belong to the class of ideal sculpture there is some originality in Mr. Swynnerton's "Group representing the upper part of a fountain," a composition in which three nude figures of youths, each in the same attitude, are designed so as to convey the idea of being grouped around a circle and carrying on a continuous movement in the same direction round it. They hold aloft a circular rim or hoop, the meaning of which would no doubt be more apparent in the complete form of the work of which this is supposed to be a portion. The flower-decoration round the pedestal within the circle of figures is much too realistic. Passing into the Lecture-room, we find among the larger figures placed in the central space Mr. Pegram's "Labour," already illustrated in the *Builder* (May 2); Mr. George Simonds's "Spring-time," a pretty nude figure in bronze in a rather affected attitude; Mr. Lucchesi's "The Flight of Fancy;" Mr. Natorp's "Atalanta;" and Mr. Walker's "The Thorn." Of these "The Flight of Fancy" is certainly the most original work; it represents a nude female figure tiptoe on two golden wings, as if carried along by them; the face is very expressive of joyous fancy; the figure is, apparently intentionally, shown of a thin and angular character, thus losing sculpturesque beauty, but giving, it must be admitted, a great deal of individuality to the work. Mr. Natorp's Atalanta is an exceedingly well-modelled figure, and appears especially so as viewed from the left side, with the head partially turned away; but there is no sign in the action of the sudden checking of speed in a figure running very fast, which ought to be expressed in Atalanta at the moment she catches sight of the apple, which is the moment depicted here; the work is a good scholarly one, but wants nerve and vigour. Mr. Walker has repeated a very old *motif* in "The Thorn," a girl stooping to extract a thorn from her ankle; but there is an air of distinction about the



"GRISELDA": BRONZE BUST, IN THE ROYAL ACADEMY EXHIBITION.
MR. ALFRED DRURY, SCULPTOR.

pose of the figure and the expression of the head which lifts the work above the commonplaces of the subject.

Among the works in relief arranged round the walls are Mr. Schenck's four circular bas-relief panels for the decoration of the Staffordshire County Council buildings, illustrations of which will be found among the lithographs in the present issue. "The Glamour of the Rose," a bas-relief by Mr. Goscombe John, has also been illustrated in our pages; it is a very pretty and poetically suggestive work, a little spoiled by the curiously long proportions of the head of the female figure.

Among the busts which are grouped around the wall we give an illustration of one, the "Griselda" of Mr Drury, which has been bought by the Chantry bequest. This is a head remarkable not so much for its physical beauty as for its expressive character; it is simply mounted on a moulded pedestal following the main lines of the bust, and decorated in the centre by a little cherubic head with outstretched wings. Altogether this is a very charming and original work. With it may be compared a portrait bust of Mrs. Arthur Bartlett by Mr. F. D. Wood; a simply treated bust worked off into a base moulding, and representing a most interesting and expressive face to which the sculptor has done full justice. The bust of Miss Marian Tempest, by Mr. Bertram MacKennal, is one of those in which effect has been sought by the introduction of small accessory figures; two small nude seated figures being introduced beneath the bust at each side, as if partially supporting it; in the bust of Mrs. Herbert Hart, a little further on, the same sculptor has tried the same effect with a little variation, the small figures in this case being turned round towards the centre of the bust and clasping hands. These two are very interesting examples of a special treatment of a portrait bust so as to give to it additional artistic interest beyond the mere portraiture.

Among the portrait busts Mr. Gilbert's of Professor Owen, a kind of half-length rather than bust, well cloaked up and examining a "specimen" through a lens, has a certain grandeur of style, and appears to be a good likeness, in spite of the doubts lately thrown on this sculptor's ability to produce *post mortem* likenesses which should be recognisable by the friends of the deceased. On the walls are various small subjects in relief which do not strike us as remarkably successful or interesting, though there has evidently been an intention to make them so. Mr. Stephens's "Happy in beauty, life, and love and everything," a very low relief of a girl seated and looking towards the spectator, is pretty, but certainly not equal to the pretensions of the title applied to it; Mr. Frampton's "Seven Heroines out of Morte d'Arthur," a panel for a door, showing figures in very low relief coloured, is decorative in general effect, no doubt, but the separate figures are not interesting nor is there any greatness of style about them, such as the names of the heroines should suggest. Mr. Gilbert Bayes's "Door-panels," two in number, a long and a square panel, are examples of a treatment which has become rather a favourite one of late, of producing a low-relief figure or emblem which seems to emerge gradually from the ground surface of the metal and resolve into it again; in this case the objects are a nude figure, or part of one, in one panel, and a fish in the other; the kind of treatment adopted is perhaps a little of an affectation, and will have its time of fashion and give place to something else. Mr. Thornycroft's low-relief bronze medallion of Mrs. Thornycroft is a very refined piece of work, also Mr. Pegram's similar treatment of the head of "Master Raymond J. Clausen."

Among the smaller works in the round are two by Mr. C. J. Allen, with whose name we are not very familiar, but which are of exceptional merit. The larger of these, in the Central Hall, is a bronze group, entitled "Love and the Mermaid," in which a nude Cupid looks down on a mermaid, whose face gazes up at him from the level of the rock on which he stands, while the voluminous folds of her fish-tail wrap round the rock. The point about this work is the feeling which it shows for composition and line in sculpture, as well as its concentrated expression. These qualities are still better illustrated in the same artist's smaller work in the lecture-room, "A Dream of Love," a group slightly recalling in general idea Canova's well-known Cupid and Psyche, but with a graver feeling about it; this is a remarkable little work and should not be passed over. Mr. Gilbert's little figure of St. George, with aluminium armour and ivory face and hands, is a remarkable miniature statue; the half realistic effect obtained by the use of the two materials is not unsuitable in a work on this small scale, though it would be disagreeable in a full-size figure. The details of the armour are beautifully finished; but the most original portion of the work is the pedestal on which the figure stands, a kind of tortoise-like shell beneath which are seen a series of hydra-heads ready to protrude; it is a kind of conventional suggestion of a dragon treated in a purely decorative manner. Mr. Oliver Sheppard exhibits a small bronze figure of a nude boy contemplating a twisted ribbon held out in one hand, with the title "The Genius of Celtic Art;" a pretty and fanciful indication of the origin of the Celtic interlacing ornament. To these we may add a mention of Mr. Pomeroy's statuette with the title "Pleasures are like Poppies Spread," a graceful nude bronze figure with a very expressive head; and Miss Chaplin's "The Toilet," a perfect study of a cat in terracotta.

Among the examples of design for decorative objects, of which we are glad to see an increasing number at the Academy, Mr. Bertram Mackennal's "Centre-piece for Dining-room Table—silver" is unquestionably first, and is in fact one of the best things in the lecture-room. It shows a stele, square on plan, with a projecting basin on each face, and above these three figures in high relief, two of them at two corners of the stele, their hands meeting and holding up a torch in the centre of the face of the stele; the third figure occupies the opposite side of the stele, which is crowned with another figure seated on a sphere. The whole has a base of alabaster with a water-trough in it. The

whole thing, though on a very small scale, is a very dignified and original design, perfectly sculpturesque in style. Mr. Natorp's "Regatta Cup" is another piece of silver work, in which the principal element of the design consists in the introduction of a Nereid on each side, forming handles to the cup, their tails meandering over the surface on opposite sides and in opposite directions, so as to cover the surface more or less. We hope this is a genuine Regatta cup and not a mere proposal, because if so it indicates some advance in the kind of design bestowed on sporting prizes of this kind, in which generally the artistic element is of the most limited and commonplace nature. A book-cover in silver, by Miss Lilian Simpson, is a good and original design; and a casket in silver and enamel for the Plumbers' Company, by Nelson and Edith Dawson, is also worth attention. The enamel ornament is introduced in the shape of armorial shields in small panels in the sides. There are some original points in the design, but the best praise that can be given is that it entirely avoids the tawdry and furniture-shop character which is characteristic of most objects of this class.

The exhibition includes also two examples of designs for such utilitarian implements as door knockers, one by Mr. Nelson Dawson, in the form of a fish, head downwards, which knocks with its lower jaw; not a good design for the purpose; the knocking portion of a knocker should always suggest something that it seems natural to knock with. Mr. Lewis's door knocker is much better in this sense; here the actual knocker is a heavy loose ring, attached to the heraldic-looking animal which forms the picturesque element in the design.

The admission of objects of this kind into the Academy exhibition shows that the Royal Academy are at last waking up to the perception that "art" is not only pictures and statues, but may be displayed in any object for common use; but this is only a beginning, and there is much more to be done in this direction before the institution in Burlington House can fully merit the title of an Academy of Arts.

NOTES.

Lord Kelvin's Jubilee.

IN joining in hearty congratulations to Lord Kelvin on the celebration of his professorial jubilee, it seems a natural occasion to give a short account of his services to the scientific world. His earliest work was in mathematical physics—investigations which must remain a sealed book to most people; but when little more than a boy they brought him into the front rank of physicists. In 1855 he worked out the law of the velocity of electric impulses in submarine cables, and thus proved the practicability of the Atlantic cable. Soon after, by the invention of the mirror galvanometer, he gave the world its most delicate measuring instrument, and enabled the cable operators to read the infinitesimal impulses transmitted with ease. His siphon recorder was an improvement on this, as it actually writes down the message sent. His introduction of pianoforte wire for deep-sea sounding, and his invention of a compass unaffected by the induced magnetism of iron ships, almost revolutionised the methods of navigation. His standard balances for measuring electric currents, and his multicellular voltmeters for measuring electric pressures, are more trustworthy than any others; and he has recently invented an electric meter which threatens to displace a good many now in use. The above are but a tithe of his many inventions, and, considering their importance, there can be no doubt that Lord Kelvin stands unrivalled as an inventor.

Lord Kelvin's Influence on Scientific Thought.

AS a speculative philosopher Lord Kelvin is pre-eminent amongst the thinkers of the century. His theories of the degradation of energy, the size of atoms, the cooling of the earth, and the vortex theory of matter, are only a few of the speculations with which he has stimulated scientific thought and guided physical research during the last fifty years. The great work on "Natural Philosophy," which he wrote in conjunction with Professor Tait, has had an incalculable influence on physical science. It is worthy of being classed with Newton's *Principia*. Clerk Maxwell, the inventor of the electro-magnetic theory of light which is now universally adopted, said that it was to Lord Kelvin's advice and assistance that he owed most of what he knew on electricity. Besides Lord Kelvin's published works, it has to be remembered that for fifty years successive generations of young men from all parts of the world have been initiated by him into the wonders of physical science, and often during lectures he has thrown out most valuable hints, which have been followed up and published by his students in after years. It was only the other day we saw a voltmeter from Japan with the name of one of his favourite Japanese students stamped on it, and there could be no mistaking whence he got his inspiration. When the history of the nineteenth century comes to be written, Lord Kelvin's influence on the direction of scientific thought and discovery will be found to have been more important than that of any of his contemporaries.

The case of Captain Simonds.

THE London County Council, while advertising its lofty morality, has done little credit to its character for judgment, fairness, or generosity, in its treatment of Captain Simonds. There is no doubt that the chief of the Fire Brigade was guilty of a grave indiscretion in overlooking or making a dead letter of the order precluding officials of the Council from having any interest in patents; and there is no doubt that it is of the highest importance, with the recollection of the history of the Metropolitan Board of Works in our minds, that officials of the County Council should keep entirely clear of the slightest suspicion of being commercially interested in their dealings in regard to work submitted to the Council; and Captain Simonds has been to blame in not keeping himself clear of possible suspicion. But there is every reason to think (and the letter from Messrs. W. Rose & Co. in Thursday's papers confirms this) that he had, in fact, no personal interests to serve in any transaction with which he was officially connected, and probably that will be the opinion of most persons who have followed the evidence with unprejudiced minds. An official reprimand would have met the whole case; but the Council seems to have preferred to seize the opportunity at once of airing its virtue and of getting rid of an official who, like his predecessor, was too independent for them.

German Architectural Congress.

THE preliminary programme of the bi-annual meeting of the Amalgamated Society of German Architects and Civil Engineers states that the gathering will this year be held at Berlin. The locality has been selected partly on account of the exhibition which is being held in that city, and partly because of an important anniversary in connexion with the foundation of the principal Societies. August 30 is the date selected for the opening meeting, and the Imperial Houses of Parliament in Berlin will be the head-quarters of the Congress. The whole of the lobbies, dining, and refreshment rooms have been put at the disposal of the architects by the Government, and the meetings will be held in the principal Council Chamber of the Lower House. As usual, the programme promises a number of highly interesting lectures, and at the same time much sight-seeing, and numerous official receptions and banquets. Among the special visits in connexion with the Congress we notice that there is to be an excursion to the old Castle of Marienburg, which has lately been the subject of a lecture at the Architectural Association.

Fire Congresses.

WE have had occasion to refer to the Fire Congress at Amsterdam which was held last autumn. This meeting of firemen, architects, engineers, insurance officers, and public officials was the first gathering of its kind on the Continent in which the subject of fire protection was treated in a scientific manner. The whole of the proceedings, together with the numerous papers presented, have now been printed in the form of a book of some three hundred pages, and the executive must certainly be congratulated on the able way in which everything, from the original programme to this final report, has been carried out. We have much to learn from our Continental neighbours, more especially from Austria and Germany, as regards fire protection; but unfortunately, instead of paying attention to fire *prevention*, our authorities seem to restrict their efforts to fire extinguishing and that at all costs, including those incurred by excessive water damage. In the Programme of the Fire Congress about to commence this week in London we see a great deal promised of catch-penny tournaments and exhibitions, which, whatever their spectacular interest, do little towards increasing our chance of immunity from losses by fire.

The Saxon Diet Building.

THE question has been raised of rebuilding the Saxon Diet Chambers at Dresden, and the *Deutsche Bauzeitung* of last week produces some interesting plans in illustration of its remarks upon the subject. The architect entrusted with the design is Professor Wallot, the architect of the Houses of Parliament at Berlin, who has taken a professorship at Dresden, and it is now merely a question whether it would be better to restore and alter the premises facing the famous Bruhlstrasse, or pull

down a large block consisting of the Bruhl Palais in the old Ministry of Finance, and give the Diet an entirely new home. As far as we can judge from the drawings we should prefer to see the historical Bruhl Palais kept intact, and hence favour the scheme of rebuilding on the neighbouring site rather than erecting an entirely new structure. In the able hands of Professor Wallot this rebuilding promises to be very satisfactory, and the plan he shows is a masterpiece of clever adaptation to most difficult circumstances.

The Paris Exhibition.

THE Senate has at last voted the scheme for the 1900 Exhibition, which can now be entered on without further delay, time being short enough as it is for a scheme which includes not merely the temporary class of buildings usually required for an Exhibition, but the building of the two palaces on the Champs Elysées, which, being intended for permanent use, must be of a solid and monumental character, unless they are to be built over again after the exhibition, as was the case with the Trocadéro. Both in official circles and in the Paris press there is already a discussion as to the possibility of laying the first stone of the exhibition buildings with a special ceremonial, on the annual Fête-day of July 14. The ceremony, if carried out, will take place at the point in the Champs Elysées at which it is proposed that the principal entrance of the exhibition should be placed. The Exhibition scheme has passed through many vicissitudes in the outset; we hope it will now be carried out in a manner worthy of the artistic reputation of the French nation.

Marble Window-panes.

MR. ROBERT HALL, mason at the British Museum (Natural History), has hit upon a novel kind of window-pane. Instead of using frosted and coloured glass for ornamental window and door-panel work he employs marble. He cuts the stone into exceedingly thin slabs, a few inches across, and after polishing both sides of a slab he fixes it to a piece of clear glass. Such thin pieces of stone transmit light, though they are not perfectly transparent, and any veinings or fossil markings upon them come out as a pattern. The best stones for the purpose are the highly-coloured Devonian limestones from the neighbourhood of Plymouth and Torquay. In making the slabs the stone is cut and ground down so that it is not more than 1-50th of an inch in thickness, which reduces the colour very considerably when the pieces are held up to the light. Thus a deep red marble comes out as a very pale red, an orange is reduced to light yellow, and so on. Some of the corals of the Devonian and carboniferous limestones yield exceedingly fine sections, and so do pieces of fossil wood. The only objection we can see from a manufacturing point of view is the nature of the cement used to fix the thin slabs to the glass. Canada balsam is (owing to its refractive index being about the same as calcite) indispensable in the examination of thin rock-sections under the microscope, but its melting point is too low, and it becomes softened too readily to enable it to be placed to advantage in the sun. It might last for a few years, and then it would crack all over. As an experiment, a window-pane has been made in the manner described, and has been exposed for some months in one of the studies of the museum, and it certainly has done very well so far. We understand that the cost of such windows, lead glazed, is not excessive; there should be a future for them in the market.

Old Southwark.

THE London County Council have united, for civil purposes, the parishes of St. Thomas and St. Olave, Southwark. The latter is an ancient parish; its church is one of the four in London that were dedicated to the Norwegian Olaf, saint and martyr, who, by one account, helped Ethelred II. to resist the Danes, defeating them at this spot, at the south end of (old) London Bridge. In this parish lay some of the property of Sir John Fastolfe, which passed to his executor, Waynflete, Bishop of Winchester, for the founding of Magdalen College, Oxford. Fastolfe's house was in Stoney-lane, St. Olave's. He owned the "Boar's Head," adjoining the "White Horse," on the left hand of one entering Southwark from the bridge, and Pickle Herring, which commemorates his Yarmouth trade. The small parish of St. Thomas, being a "peculiar," was originally the close of a religious house dedicated to St. Thomas of Canterbury, founded in the twelfth century, which until the fire of 1212 stood within the precincts of St. Mary Overeye, latterly St. Saviour's. After the fire the house of charity was established on the east side of the Borough High-street, and having been enlarged by Peter de Rupibus, Bishop of Winchester, enjoyed a yearly revenue estimated at 266*l.* 17s. 6d. at the Suppression. King Edward VI. gave Becket's Spital, also known as the Hospital of the Holy Trinity, to the Corporation, who renamed it after St. Thomas the Apostle. The (old) hospital chapel became the parish church, and along its north side stood the middle court of the later hospital. The sites of old St. Thomas's Hospital and of Guy's Hospital cover one-third of the parish. We understand that the Court of Common Council have agreed to amalgamate with the City the present Ward of Bridge Without, consisting of the two above-named parishes and those of St. Saviour, St. John Horselydown, and St. George-the-Martyr.

The Disraelis in Bloomsbury.

INCLUDED in some leasehold property in Bloomsbury recently placed in the market is the corner block (on the Bedford Estate), Nos. 23, Hart-street, and 5, Bloomsbury-square—a quarter closely associated with the lives of Lord Beaconsfield and his father. The former was born on December 21, 1804.* In the entry of his baptism, July 13, 1817, at St. Andrew's, Holborn, he is described as "from King's-road, and said to be about twelve years of age." Isaac Disraeli had removed from the Adelphi shortly after his marriage to a house, No. 6, in King's-road, by the corner of John-street, which seems to be what is now No. 22, Theobald's-road. Mr. S. L. Lee, in the "Dictionary of National Biography," says, on the authority of a statement in *Notes and Queries*, that he occupied No. 6, John-street, during the interval 1803-17. However this may be, he quitted what was then King's-road (or John-street) in the spring of 1818, and went to the house then numbered "6," but re-numbered "5" in 1857, in Bloomsbury-square, where he brought out his most valuable work, "Commentaries on the Life and Reign of Charles I." In 1829 he left London for Bradenham, Bucks, where he died in 1848. Lord Beaconsfield commonly resided in his father's house in town and in Buckinghamshire until he married, 1835, Mrs. Lewis, and went to her house, No. 1, Grosvenor-gate (since No. 29, Park-lane), where he lived until her death in 1872.

* Hackney; Trinity-row, since No. 215, Upper-street, Islington; the Adelphi; John-street; and Bloomsbury-square contend for the honour of his birth-place.

The Von Schmidt Monument.

WE have several times had occasion to refer to the monument to the late Friedrich von Schmidt, which has now been unveiled at Vienna. The ceremony was an exceedingly imposing one, and spoke well for the general interest of the Austrian public in their great architects. We should add that this is one of the first statues in memory of an architect erected in Austria; while in Germany numerous monuments will be found to deceased members of the profession, such as Schinkel and Gottfried Semper.

A Metal-work Exhibition.

WE are glad to see that the Glasgow Institute of Architects, a body most active in the cause of architecture and the allied arts, propose to hold an exhibition of metal-work at their rooms at 187, Pitt-street, in October of this year. The exhibits will include cast and wrought iron, brass and copper work, ormolu, lead, silver, and other metals capable of decorative treatment; among which we hope that pewter, though not mentioned, will not be forgotten. Those who have seen the artistic work in this material exhibited by one or two French artists in metal at the Champ de Mars Salon from time to time, cannot but form a high idea of its capabilities for work in which the value consists in the design rather than in the bullion value of the material. The Committee includes the names of some of the leading architects in Glasgow, and we have no doubt that they will use every effort to give a high character to the exhibition.

Institute of Painters in Water-colours.

THE exhibition of the Institute is a *bonâ fide* "Sketches and Studies" exhibition, consisting mostly of sketches from nature on the spot, and small studies for figures or pictures. In two of the rooms the sketches of each exhibitor are grouped together, an arrangement which renders them both more interesting and more useful for study than if they were scattered about. It is curious to note how far the sketches, in some cases, show how much an artist may spoil his work in finishing it; for we find some groups of sketches showing great breadth and freedom of style, by painters whose finished work, as generally known at this gallery, is not specially marked by such qualities. On the other hand, some artists of the true broad school of water-colour painting, who never over-finish their drawings, such as Mr. Wimperis, show to less advantage in the slight sketches exhibited here than in their completed works. There is however a great deal of pleasant and in-

teresting work, and we regard the exhibition as one of the best which the Institute has recently held.

Pictures by Mr. Shannon.

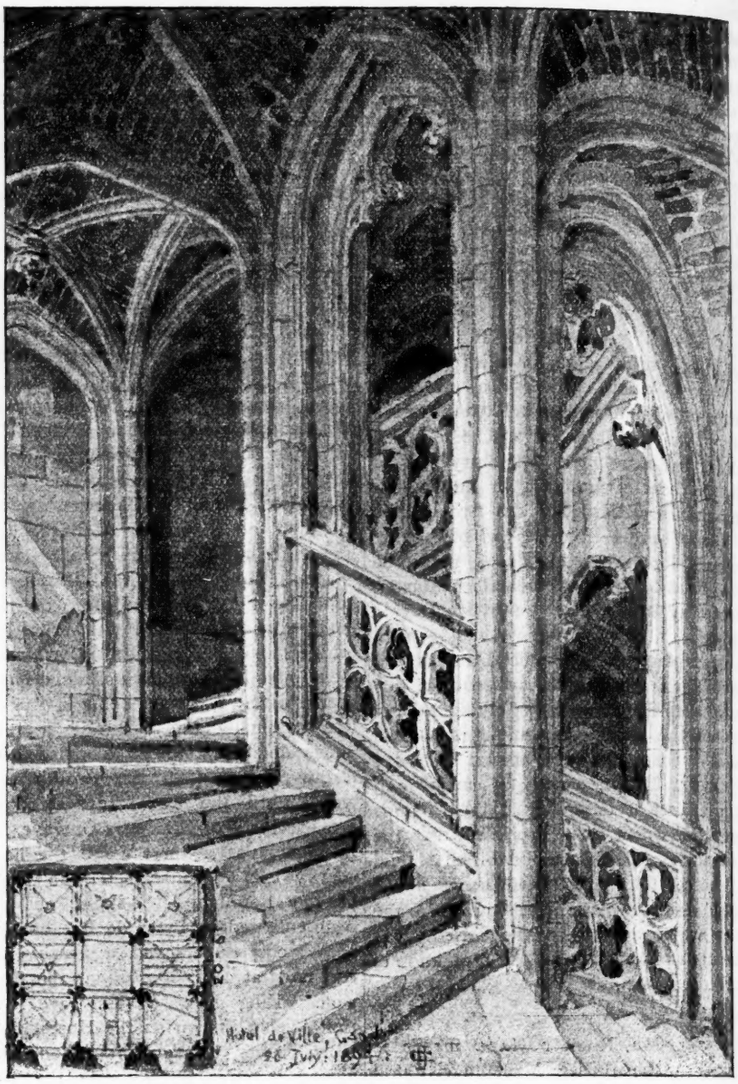
THE exhibition of pictures by Mr. J. J. Shannon, on view at the Gallery of the Fine Art Society, is hardly a fair representation, as a whole, of the painter's best qualities. It shows a rather random collection of works, some of which we should suppose were painted a good while since, and seem rather like experiments of a painter in search of a style. "In the Springtime," for instance, is a frank adoption of the manner of the French *plein-air* school, as if deliberately selected on the part of an artist not usually practising that style. The most solid and masterly works in the collection are the portraits of Colonel Lockwood and Captain Davey. Among the slighter works the portrait of a child under the title "Tales of Japan" is an admirable example of fine colour and broad handling. The head of "A Violinist" is also an exceptionally powerful study.

Artistic Posters.

A SMALL collection of original designs for posters, by Mr. Louis J. Rhead, of New York, is being exhibited at the St. Bride's Foundation Institute, Bride-lane, Ludgate Circus, where it has been arranged by Messrs. Hare & Co. The collection shows to what a high pitch of excellence the designing of posters has been carried in the States, and the importance which manufacturing firms, newspaper proprietors, and others in that country attach to this form of advertisement. Most of them are excellent in design and in their scheme of colouring, and although some are less successful than others, all are in good taste, and entirely free from that tendency to sensational vulgarity which characterises the work of some of the later English designers. A vivid scheme of colouring, characteristic of the work of Grasset, the great French poster-designer, is to be observed in all Mr. Rhead's designs, which are eminently suitable to the dull atmosphere of English towns. The flat decorative treatment of these posters is, of course, forced upon the designer by the mechanical process of chromo-lithography, a restriction which in this case is productive of the happiest results.

THE HELLENIC SOCIETY.

AT the annual meeting of the Hellenic Society, the new Director of the British School at Athens, Mr. Cecil Smith, gave an interesting account of the remarkable bronze statue recently discovered at Delphi. He had just returned from the site, and, from personal examination of the statue, was able to add some important details to those that have already appeared in the press. The statue was discovered north of the Temple of Apollo, and at a great depth below the surface of the ground. It was found in two parts, the trunk first and then the head and shoulders. A little later, and close at hand, an arm with reins in the hand came to light, a horse's tail, and other portions of a horse. It was sufficiently evident that the group consisted of a quadriga and charioteer, the figures of life size. As the whole of the ground north of the temple has been thoroughly explored, there is little or no hope that any further fragments will come to light. The statue is admirably well preserved, and covered with a beautiful blue patina. Its style marks it as belonging roughly to the period of the Ægina marbles, and the heavy character of the casting points to the same date. It represents a full-grown boy on the verge of manhood; slight whiskers are indicated on the cheeks, but there is no beard on the lip. The figure is draped, as was customary with charioteers, in a long chilon girt at the waist and with cross-straps. The eyes are specially remarkable; they are still intact. The white of the eye is rendered in white enamel, the ball in brown; the eyelashes are indicated in small spikes of bronze. Most happily, with the statue was found a marble basis, the attachment marks on which greatly facilitate a restoration of the group; and on this basis is an inscription, no notice of which has, we believe, as yet appeared in England. The inscription states that the group was dedicated by Hiero. On the strength of the inscription the French excavators are inclined to see in the statue a portrait of Hiero himself. This Mr. Smith doubts. He thinks it improbable that the great tyrant would have been represented in the somewhat menial function and dress of a charioteer. He conjectures that Hiero may have stood by the side of his driver. Mr. Smith characterises the discovery as the great archæological find of the year. After doing full justice to the work of the other schools, he passed to his own work at Melos and Kynosarges, but as a fuller report will be presented at the meeting of the British School, we propose to reserve our account till after that date. The chair was taken by Sir Edward Maunde Thompson.



STONE STAIRCASE, HÔTEL DE VILLE, GHENT.

FROM A SKETCH BY MR. J. J. CRESSWELL.

STAIRCASE, HÔTEL DE VILLE, GHENT.

THE illustration of this picturesque late Gothic staircase is from a monochrome water-colour sketch by Mr. J. J. Cresswell, architect, of Grimsby. The plan in the corner shows the arrangement of the staircase, and the manner in which an occasional stray "winder" is introduced in order to humour the headway.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS:

MEETING AT HANLEY.

A Midland Counties' District Meeting of the members of the Incorporated Association of Municipal and County Engineers was held at Hanley on the 13th inst. Mr. E. R. S. Escott, of Halifax, presided, and amongst those present were Messrs. J. Patten Barber, Islington, H. P. Boulnois, Liverpool; J. T. Eayrs, West Bromwich; R. Godfrey, King's Norton; S. S. Platt, Rochdale; J. W. Wardle, Longton; A. T. Davis, Shrewsbury; E. G. Mawbey, Leicester; and others. The members assembled in the Town Hall, Hanley, where they were received by the Mayor and other members of the Corporation.

The Mayor offered the members a very hearty welcome, and said that under the guidance of Mr. Lobley they would have an opportunity of seeing the improvements which Hanley had made since the Association was last there ten years ago. He thought, considering the size of the town, they had kept abreast of the times.

The President of the Association (Mr. Escott) then took the chair, and thanked the Mayor for his reception.

Mr. Davis, County Surveyor of Shropshire, Hon. Secretary, having announced letters of apology from Mr. Cartwright, Bury; Mr. Lewis Angell, West Ham; Mr. May, Brighton; Mr. A. M. Fowler, Manchester; Mr. Pritchard, Birmingham; and Mr. Bradley, Wolverhampton.

Mr. J. Lobley, C.E., Borough Engineer, of Hanley, then read a paper on "Some of the Public Works carried out in Hanley during the past ten years." He said that since the previous visit of the Association various extensions had been carried out at the sewage-

works. An additional precipitation tank, measuring 200 ft. by 100 ft., had been constructed. About nineteen acres of land had been purchased, which was reserved for filtration areas. Four sludge presses, with air compressor and circular sludge tank and other appurtenances, together with the new buildings required, had been erected. Plans had been approved by the Local Government Board, and the work would be shortly taken in hand for dealing with the small outlying districts which were below the level of the existing intercepting sewers. It was proposed to lay down the Shone system for these districts, which, although small, were a considerable distance from each other, extending from a mile to the south-east to a mile to the north-west. An additional air compressor would be erected at the sewage works, and would probably be driven by electricity, thus affording some work for the electric light engines and boilers during the daytime and after midnight. Since the beginning of May, the consent of the Town Council having been given to the experiment, the Bacillite Sewage Purification Syndicate had had arrangements in progress for dealing with the sewage. With regard to the municipal offices and buildings, he had erected a large assembly hall to accommodate 3,000 people, including promenade standing room. For political meetings, or other large gatherings, by removing the chairs from the ground floor, over 5,000 people had been present at one time. The building had been erected and furnished for £10,000. The ceiling was elliptical in section, but part of the roof timbers and tie-beams came down below and were visible. Until the design was fully carried out as regarded decoration these timbers certainly did not present a very good appearance. The object, however, of their existence, in lieu of any other form of roof and ceiling, had been obtained, as the acoustical properties of the hall when filled, both as regarded music and public-speaking, had given general satisfaction. As it was the year of the Queen's Jubilee the title of Victoria Hall was given to the building. The late Borough offices had been converted into the Free Library. The cellar under the reading-room had been deepened, tiled, and furnished as a boys' reading-room. The museum was located in the former large room of the Mechanics' Institution. At the time of the annual meeting Hanley had no park; indeed, no sign existed that there was likely to be one within a measurable time. The movement to secure land for a park before all available and accessible areas were built upon began in 1889, and rapidly found favour. The park at present in course of formation consisted of 104 acres, twenty-four of which were left as a fringe outside the park for building residences. A portion of the land on the north side had been recently sold, and had realised good prices, the amount obtained being over 8,000*l.* Doubtless there were some disadvantages; trees, shrubs, and flowers could not be expected to flourish quite so well, and the sight of the smoke was to be regretted. On the other hand, the close proximity of a park, merely as an open space, to the residents of a manufacturing town must be regarded as a great boon and the expense entailed had been ungrudgingly incurred. No large land-owner was at hand to make Hanley a present of a park or two, as many other towns were fortunate enough to possess, and land had to be bought for all three parks at an average price of £500 per acre. The cost of the park remaining a charge on the ratepayers would be over £70,000. A provisional order was obtained in 1891, enabling the Corporation to lay down mains and erect buildings and plant for the supply of electrical energy within the Borough. He visited America in the autumn of that year and made special visits to the electric lighting stations in towns of about the same size as Hanley in order to make himself acquainted with the general business engineering arrangements required. The designing and carrying out of the buildings, lines of mains, erection of generating plant, and all works in connection therewith had from the first been entrusted to him. In September, 1892, the Council entered into a contract with the Brush Electrical Engineering Company for the boilers, engines, dynamos, mains, and sub-station transformers, requisite to deal with the compulsory area lighting, both public and private, in its first stages; the system adopted being that known as high pressure alternating current with transformers at sub-stations from which low pressure distributing mains were laid to consumers' premises. The reasons that influenced the Council in selecting this system as against a continuous current system—as being more suitable for a place like Hanley, were:—(1) The works could be placed away from the centre of the town, and where land was less valuable, and where consequently the extensions could be more readily made as required; (2) the north-eastern corner of the Park Estate, adjoining the canal, was available as the site for the electricity works, and would be found to be very conveniently situated, and but little removed from the actual centre of the area of supply. Further advantages accrued from its proximity to the canal, for the supply of coal and water for condensing engines. The high-pressure mains were concentrically arranged in one cable with insulating material between the two sets of copper strands, the whole being insulated and protected by outer coverings. The low-pressure distribution mains were not concentric, but were laid double in cast-iron troughs, afterwards filled up solid with pure bitumen. The capacity of these mains was practically increased to any extent desired by reducing the area served by them. This was done by adding transformer stations at the points of most demand. The contract for public lighting included provision for thirty arc lamps of 1,200 candle power each. These were arranged in series supplied with electricity by a special cable from a continuous current dynamo. A second engine and dynamo was provided as reserve. Within and adjacent to the district through which the electric light mains passed were other existing gas lamps, in addition to the fifty-three lamps of various sizes that were dispensed with by the establishment of the thirty arc lamps. At present it was generally conceded that arc lamps should be used for leading thoroughfares, but there were many positions, particularly in side streets, where such a lamp was out of the question, and where an ordinary gas-burner or a sixteen-candle-power glow-lamp would suffice. He had devised an arrangement for lighting incandescent gas lamps in parallel without sending round the lamplighter. Where arc lamps existed in series controlled from the central station, and had independent continuous current plant and cables, the arrangement was as follows:—The arc lamp was passed through the apparatus (which was placed at sub-stations), and, whenever the arc lamp current was turned on, the apparatus switched on the current from the general supply low-pressure mains to the incandescent lamps arranged in parallel. These should not exceed twenty 16-candle power lamps off one connection, so that the distance of the furthest lamp should not exceed 200 yards. When the arc lamps were turned out, the apparatus switched off the current supplying the incandescent lamps, which were thus automatically lighted and extinguished by closing or opening the arc light circuit at the electricity works. The apparatus consisted of a solenoid or electro-magnet operating a lever; the current of the arc lamps energises the solenoid or electro-magnet, lifted the lever, and by a mercurial or other switch, closed a low pressure circuit for the incandescent lamps. The first loans sanctioned were as follows:—Electricity works, buildings, generating plant, mains, &c., for dealing with the compulsory area of thirty-five acres in the centre of the town, 21,000*l.*; meters, 1,000*l.*; wiring Corporation buildings, 3,000*l.* Current was first supplied in April, 1894, and the works formally opened in the following July. The plant and mains were capable of supplying 10,000 eight-candle-power lamps, and before the end of that year the demand had exceeded the safe limit, and rendered it imperative to extend the works and mains. Additional sanctions were obtained amounting to 24,000*l.*, the capacity of the works both for public and private lighting being doubled, and the mains commanding an area of 400 acres. Supply could be given to all applicants along the entire length (1¾ miles) of the main road through the borough from Stoke Station on the south to the Burslem borough boundary on the north. The generating plant first erected consisted of three Lancashire boilers, each 28 ft. by 7 ft., working pressure 120 lb. per square inch; four vertical compound condensing engines, viz., two 200 and two 100 indicated horse power; four alternating current dynamos, namely, two 100 and two 50 kilowatts, each driven from engines by ropes; separate compound engine for air and circulating pump and surface condenser; two dynamos for street arc lighting, driven from two vertical compound steam engines of 30 indicated horse power each; two 10-kilowatt continuous current exciters driven by belts, each from one of the 50-kilowatt alternators. The plant erected for the extensions consisted of one 300-kilowatt Ferranti fly-wheel alternator with exciter, one new exciter to each of the former 100 kilowatt alternators, thus providing each alternator in the station with its own exciter. The electric light mains for the extensions consisted of paper insulated concentric conductors, lead-covered, and laid in troughs afterwards filled up with resin compound, all supplied by the British Insulated Wire Company. In carrying out the works he had been ably assisted by Mr. G. H. Cottam, the Corporation electrical engineer, who had the running of the works in his charge until he received the appointment of Chief Electrical Engineer to the Hampstead Vestry, and also by Mr. C. A. Cowell and Mr. C. J. Sutherland, who were appointed last September electrical engineers and joint managers under his general direction. Regarding the financial aspect of the undertaking, the ratepayers had every reason to be satisfied with the prospects. Not only did the works conclude the first completed year on December 31, 1895, with a balance in hand after paying all expenses, including interest and redemption of loans, but on December 31, 1894, with practically less than six months' running, there was a favourable balance after discharging all obligations, including a whole year's interest on loans. The price charged per unit was 5d., current for motive power was offered at 3d., and to churches, &c., for Sundays, at 4d. The Town-hall, Baths, Free Library, General market, Fish market, Butcher's market, School of Art, higher grade school, St. Mark's Church, and the public clocks at the old Town-hall and Shelton Church were lighted throughout by electricity. During the last ten years opportunity had been taken from time to time to widen the main road between Hanley and Stoke.

The President said it was a great advantage to Hanley to have a gentleman like Mr. Lobley, who seemed to have the technical knowledge and experience of every department. Some of them in larger towns found their work ran in a certain routine, such as sewage disposal or tramways; but there, Mr. Lobley went in for electric lighting and the laying out of parks.

Mr. H. Percy Boulnois, Liverpool, proposed a vote of thanks to Mr. Lobley for his paper. He agreed with the President that the paper showed them distinctly the multifarious duties which a Borough Engineer had to perform. Here they had architecture, sewage disposal, electricity, each one a specialty in itself, and from what he had seen of Mr. Lobley's work he could heartily congratulate him and Hanley upon the way in which he had carried out this difficult and arduous work. He criticised the ceiling of the town-hall as not "a thing of beauty or a joy for ever," but he understood that the acoustic properties of the hall were due to the ceiling. Therefore, Mr. Lobley was right in sacrificing æsthetic views to a more utilitarian purpose. With regard to the electric lighting, he had no doubt Mr. Lobley advised them thoroughly well when he advocated the high-pressure alternating-current system, under the circumstances of the works being so far from a straggling district. Otherwise he was not in favour of the high-pressure system. There was a considerable amount of loss in sending to the transformers and in the transforming operation. With electricity works there was a varying load, which gradually increased up to a certain point, and then rapidly descended. To his mind, it would have been better to have split up the power to a smaller unit, and to have had the Willans & Robinson engines. He was much interested in Mr. Lobley's plan for lighting the incandescent lamps. It was a most ingenious arrangement, and one to be commended.

Mr. Mawbey, of Leicester, who seconded, referring to the sewage works, remarked that nineteen acres of heavy land would not be of much use for irrigation or intermittent filtration, but they would have to depend upon chemical filtration. With a population of 200,000 and clay land they required 1,400 acres to clarify the sewage at Leicester, but they had succeeded in sending out a satisfactory effluent. With respect to electric lighting, he did not agree with Mr. Boulnois. They had the same system at Leicester, where the works were carried out by Mr. Colson, and they had not regretted adopting it. He thought they had eminently gratifying proof of the success achieved up to the present time at Hanley. An undertaking which had to double its load within twelve months, and which could supply current and make a profit on it at 5d. and 3d. per unit, spoke volumes for its success.

Mr. Platt, Rochdale, asked whether the differential rate for electricity supply for churches and other places of worship had been taken advantage of. It was a new idea to make differential rates in their case, though it seemed the right thing to

do, because it was utilising the light on the day when shops and places of business were closed, and there was less demand on the electrical plant.

The vote of thanks having been accorded,

Mr. Lobley, in acknowledgment, said with regard to the loss on the high-pressure alternating system, the electrical engineers who were present would corroborate him in putting the daily loss at 5 amperes of 2,000 volts, representing 10 kilowatts. The chief advantage of low-pressure stations was that they could use accumulators; but they had to pay for that advantage. For every thousand kilowatts they put into secondary batteries he should not like to say how much they got out. With regard to Mr. Boulnois' suggestion of small units of plant, he said the tendency was growing to put large units of plant down. They did not want small units with the alternating system except in the daytime, and for light loads in summer. With regard to the sewage works, he said the extra land was for filtration purposes, and they hoped that chemical filtration would improve to such an extent that they would be able to put the effluent into the Trent, from which no drinking water was taken. In reply to Mr. Platt, he said that Shelton Church was lighted entirely with electricity, and it was an advantage to get customers on Sunday evenings.

The members having partaken of luncheon provided by the Mayor and Chairmen of Committees, proceeded to view the various public works described in Mr. Lobley's paper. At the Sewage Works,

Mr. A. P. Hope gave a brief description of the bacillite process of sewage treatment which is being tested at the Works. He said the sewage was treated with lime and protochloride of iron, which was a by-product from galvanised iron works, and was very cheap. After the sewage was precipitated to this lime and protochloride of iron, it was passed through batteries, and subjected to carbonic acid steam. If there was any excess of alkalinity in the sewage, it was neutralised by this treatment, and, after filtration with a Thwaites mechanical filter, the solids were reduced to 1·5. All the germ-life was destroyed, and the effluent could not be condemned. If they wanted an even higher degree of purity, they could pass the effluent through an oxydising filter such as polarite or coke.

CITY AND GUILDS OF LONDON INSTITUTE.

NEARLY two thousand guests accepted the invitation of the City and Guilds of London Institute to a conversazione at the Central Technical College, Exhibition-road. Lord Halsbury, the Chairman of the Council, and Lady Halsbury received the guests in the library. The students of the College and their friends gave a vocal and instrumental concert, and the National Hungarian Band played a popular selection of music. The arrangements were excellent, and as the workshops and laboratories were in full swing, the demonstrators and senior students describing the apparatus and experiments to the visitors with manifest enjoyment, the conversazione was a distinct success. Numerous demonstrations of shadow photography were given; we very soon lost count of the number of focus tubes and fluorescent screens in action, but the interest of the public in them shows little abatement.

We were interested in the results of some experiments made on the rise of temperature in underground electric mains. Diagrams were shown proving that the rise was least in armoured cables, less even than when the mains were buried directly in the earth. The rise in cables embedded in bitumen was considerable, and this rise increasing their resistance must increase the power lost in distribution. This research seems worth following up.

We studied Professor Ayrton and Mr. Mather's magnetic tester carefully, and were pleased with the quick direct readings it gave. However, from the manufacturers' point of view, it is no better than Professor Ewing's instruments, and there is no prospect at present of their being able to save the heavy fees charged for testing samples by the ballistic method.

In Professor Ayrton's room there was a most interesting exhibit showing the development of the electrical measuring instruments at the Central Technical College. It gave one a very fair idea of the immense amount of work Professor Ayrton and his assistants have done in this direction.

In the optics laboratory the methods of testing the efficiency and life of glow-lamps and the efficiency of gas-burners were shown. The student who was in charge of the apparatus for testing glow-lamps gave an excellent description of the photometer he was using, but he laid too great stress on the fact that the lamps were not tested on a commercial circuit, but that great precautions were taken to prevent the slightest changes in the pressure. Interesting perhaps from the purely scientific point of view, but tests made on commercial circuits would be of greater practical importance.

Of course it is impossible to judge of the actual work done in the laboratories from a visit on a special occasion, but there could be no question as to whether the students who were on duty were interested in their work or not. A tendency on their part to fall back to vague references to their note-book when they got into difficulties was only natural, but it is a tendency that should be repressed when they go into works. Some of the instruments, &c., made by the students were wonderful examples of careful workmanship; it is to be hoped that their application met with its due reward in the knowledge and skill acquired.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans.—Upon the recommendation of the Finance Committee it was agreed to lend the St. Martin-in-the-Fields Vestry 1,400*l.* for acquiring premises for widening Green-street; the Hackney Vestry 12,750*l.* for making alterations at the Vestry offices; the Wandsworth District Board 1,800*l.* towards the cost of constructing a river wall; and the Holborn Guardians 6,800*l.* for additions and alterations at the workhouse.

The Chief Officer of the Fire Brigade.—At the conclusion of a long report the General Purposes Committee recommended that the Council should disapprove of the action of the chief officer of the fire brigade, Captain Simonds, in regard to the patent for hose tenders, and in having made a report with reference to fire-escapes which was not impartial, and that he be called upon to send in his resignation. Nearly the whole of the sitting was devoted to the consideration of the matter, and it was ultimately agreed to call upon the chief officer of the brigade to resign.

The Strand Widening.—The Improvements Committee reported with reference to the Strand improvement, confining their recommendation to the removal of the block of building south of Holywell-street, leaving for some future occasion the question of providing for the traffic passing on the northern side of St. Mary's Church, and of adding to the public way portions of the enclosed spaces adjoining the two churches. The proposal was—The minimum width of the Strand south of St. Mary's Church is about 49 ft., to the south of the Holywell-street block of buildings the street at one part is only 40 ft. wide, and to the south of St. Clement Danes Church the thoroughfare again opens out to a width of 49 ft. To the north of St. Mary's Church the width of the street is at present but 22 ft., the carriageway being 10 ft. 9 in. Holywell-street has a width varying from about 13 ft. 3 in. to 20 ft. 9 in., whilst to the north of St. Clement Danes Church there is a width at the narrowest point of 38 ft., and at the widest part of about 51 ft. The Strand between Wellington-street and St. Mary's Church has a width varying from 70 ft. to 104 ft., and the road to the east of St. Clement Danes Church opposite the Law Courts has a width of 113 ft. By the scheme the Committee propose there will be a clear width of road of 49 ft., as at present, south of St. Mary's Church, an average width of 130 ft. for a distance of 640 ft. between the two churches, and a width of at least 38 ft. on the north, and 49 ft. on the south of St. Clement Danes Church, as at present. The chief features of the scheme are—(1) the removal of the block of buildings south of Holywell-street; (2) the provision of greater road space at one of the most crowded parts of the Strand; (3) the opening to view of several architectural features at present obscured, and the admission of light and air where most needed; and (4) the formation of a much-required adequate Strand approach to the Royal Courts of Justice. The Committee recommended—

"(*a*) That the Council do apply to Parliament in the session of 1897 for powers to remove the block of buildings on the south side of Holywell-street, and between the churches of St. Mary-le-Strand and St. Clement Danes, as shown in full red colour on the plan approved by the Improvements Committee on June 3, 1896; (*b*) That provision be made in the Bill for part of the cost of the improvement to be dealt with on the same general principal as that embodied in the improvement charge sections of the London County Council (Tower Bridge Southern Approach) Act, 1895. (*c*) That, as in the case of the London County Council (Tower Bridge Southern Approach) Act, 1895, a provision be inserted that improvements made in lands or premises after June 9, 1896, when the scheme was made public, shall not be taken into account in assessing compensation, if such improvements be made with a view to obtaining or increasing the compensation payable by the Council. (*d*) That provision be made for the construction of a subway (for mains, wires, &c.), and also for the planting of trees in the widened thoroughfare."

Mr. Goulding, M.P., moved, and Mr. Turton seconded, the following amendment:—

"That, while approving of the proposal that the block of buildings in Holywell-street should be removed, the Council refers the recommendation back to the Committee to consider and report without delay whether the improvement should not extend to the acquisition of the land north of St. Mary's Church (as described in the report of the Committee), so as to render the scheme more complete, and also whether power should not be obtained at the same time for the Council to acquire the freehold and long leasehold interests in the land and buildings fronting on Holywell-street."

After a few remarks from Mr. Parker, who said that the report was inconclusive, the debate was adjourned.

Chelsea Embankment Extension.—The same Committee recommended that the Council should apply to Parliament for powers to extend the Chelsea Embankment, but the consideration of the matter was adjourned.

Long-lane and Tabard-street Improvement, Southwark.—The consideration of the recommendation of the same Committee in reference to the improvement of the approaches to Tabard-street from Borough High-street was also adjourned.

Holloway-road and Elthorne-road Improvement.—The consideration of the proposal to undertake the widening of Holloway-road and Elthorne-road was also adjourned.

The Drainage of Acton.—The Main Drainage Committee recommended, and it was agreed, that the Council do apply to Parliament either to confirm any agreement that may be come to between the Council and the Acton Urban District Council as regards the use of the metropolitan main drainage system by the latter body, or to enforce the Acton District Council to make such payments in respect thereof as may be fixed by an arbitrator appointed by the Local Government Board.

Plans and Notices of Drainage Works, and Occupation of Newly-built Houses.—The Public Health Committee brought up the following report, the recommendation being agreed to.

"By Section 157 of the Public Health Act, 1875, urban authorities outside London have power to make by-laws for various purposes, including the drainage of buildings, and they may further provide for the observance of such by-laws by enacting therein such provisions as they think necessary as to the giving of notices, as to the deposit of plans and sections by persons intending to lay out streets or to construct buildings, as to inspection by the urban authority, and as to the power of such authority (subject to the provisions of the Act) to remove, alter, or pull down any work begun or done in contravention of such by-laws. Section 158 of the same Act also provides that where a notice, plan, or description of any work is required by any by-law made by an urban authority to be laid before that authority, the urban authority shall, within one month after the same has been delivered or sent to their surveyor or clerk, signify in writing their approval or disapproval of the intended work to the person proposing to execute the same; and if the work is commenced after such notice of disapproval, or before the expiration of such month without approval, and is in any respect not in conformity with any by-law of the urban authority, the urban authority may cause so much of the work as has been executed to be pulled down or removed. There are certain other requirements of the section as to the recovery of expenses incurred by the urban authority in or about the removal of any work executed contrary to any by-law, the existence of work executed in contravention of any by-law constituting a continuing offence, and the limitation of the time during which a penalty may be incurred. It has long been generally felt that it would be of great advantage if similar provisions to these applied to the county of London, and a large number of the London sanitary authorities have written to the Council urging it to promote legislation which would make it compulsory upon builders and others to give notices to, and deposit plans with, the sanitary authority before drainage work is

commenced. In framing the Council's proposed by-laws as to drainage under the Metropolis Management Act, 1855, we took advantage of the opportunity of ascertaining whether the Local Government Board would be prepared to allow the inclusion of by-laws similar to those made by provincial authorities under Section 157 of the Act of 1875. The Local Government Board, however, consider that any such by-laws are beyond the scope of the Metropolis Management Act, and it will, therefore, be necessary to make application to Parliament. In connexion with this subject there is another matter to which we desire to direct the Council's attention. Under Section 157 of the Act of 1875, to which we have already referred, urban authorities outside London have power to make a by-law to the following effect:—'A person shall not let or occupy any new dwelling-house until the drainage thereof shall have been made and completed, nor until such dwelling-house shall, after examination, have been certified by an officer of the sanitary authority authorised to give such certificate to be, in his opinion, in every respect fit for human habitation." The desirableness of the Council making a similar by-law has been pressed upon us on more than one occasion, but we are advised that the Council has no power to do so. By Section 70 of the London Building Act, 1894, if a habitable room not in conformity with that section is inhabited, the person knowingly suffering it to be inhabited is liable to a daily penalty. By Section 48 of the Public Health (London) Act, 1891, no newly-erected house may be occupied as a dwelling-house until the sanitary authority has certified that it has a proper water supply. Section 75 of the Metropolis Local Management Act, 1855, forbids the occupation of any house unless the drains and other connected works and apparatus have been constructed and provided to the satisfaction of the surveyor of the local authority. There would, however, obviously be advantage if there were power to prevent the occupation of a new house on other grounds, such as have rendered the by-law now adopted in the provinces desirable. We therefore think it very necessary that the Council should be empowered to make a by-law similar to that which urban authorities may make under the Act of 1875. We are advised that it would be possible for the Council to endeavour to obtain a power to make by-laws, dealing with all the matters referred to in the foregoing report, in its General Powers Bill, or some other Bill of next Session, and that there should be a provision that it should be the duty of the sanitary authority (as defined by the Public Health (London) Act, 1891) to enforce any such by-laws. It should also be provided that the requirements of the Metropolis Management Act, 1855, as to the making, contents, confirmation, approval, publication, and evidence of the by-laws, and of proceedings before justices and recovery of penalties thereunder should be applicable, and we also think that the penalty which, under Section 202 of the Act of 1855 is 40s., should be increased to 5*l.*, as under the Public Health Act. If the Council resolve to promote legislation the terms of the Bill would need very careful consideration, and we propose to obtain the advice of the solicitor as to the terms of the statement to be forwarded to the Parliamentary Committee, pursuant to Standing Order 262. We recommend—That the Parliamentary Committee be instructed to insert clauses in the Council's General Powers or other Bill of next Session, enabling the Council to make by-laws dealing with the matters referred to in the foregoing report."

Proposed New Theatre, Haymarket. — The Theatres and Music Halls Committee reported as follows, the recommendation being agreed to—

"On January 21, 1896, the Council approved of certain drawings showing the proposed erection of an opera house at the corner of the Haymarket and Charles-street, on the site formerly occupied by Her Majesty's Theatre and the United Hotel. The scheme, however, has been abandoned. We have now received twelve drawings, dated June 5, 1896, submitted on behalf of Mr. H. Beerbohm Tree, and accompanying an application for a certificate under the Metropolis Management and Building Acts Amendment Act, 1878, in regard to a theatre which it is intended to erect on a portion of the site above referred to. The building will have a frontage of 86 ft. 6 in. in the Haymarket, 145 ft. in Charles-street, and 96 ft. to the existing arcade, and will comply with the Council's regulations. Seating accommodation will be provided for 1,345 persons. We recommend—

'That the twelve drawings, dated June 5, 1896, be approved, with the exception of the glazed covered ways over the public footpaths in Charles-street and the Haymarket, which will require the approval of the Building Act Committee of the Council and of the Vestry of St. James, Westminster; and that the owner be informed that the works must be commenced within six months, and that the premises must be completed in all respects in accordance with the Council's regulations and the provisions of the London Building Act, 1894, and that upon our reporting the completion of the building, a certificate under the Metropolis Management and Building Acts Amendment Act, 1878, be sealed and issued to the owner of the building.'"

Council's List of Wages.—The Works Committee reported that the Central Association of Master Builders having informed them that at a meeting of the master builders of London and the representatives of the carpenters and joiners on May 29, 1896, it was decided that the rate of wages of carpenters and joiners should be raised on June 1, 1896, from 9½d. to 10d. per hour, the Committee recommended that the rate of wages of carpenters and joiners in the Council's list be altered from 9½d. to 10d. per hour. This was agreed to.

Another New Asylum.—After discussion, the Council agreed to purchase Horton Manor Estate, Epsom, comprising 1,060 acres, as a site for a seventh lunatic asylum, for the sum of 40,900*l.*

Surveys of Dangerous and Neglected Structures in North-east Hackney.—The Building Act Committee reported as follows:—

"Mr. F. R. Meeson, the District Surveyor for North-east Hackney, has asked to be relieved of the duty of surveying dangerous and neglected structures within his district. This duty is not imposed upon the district surveyor by statute, and the work may be done either by him or by some other competent surveyor. We have accordingly arranged that this duty as regards North-east Hackney shall be discharged by Mr. H. Lovegrove, the District Surveyor for South Islington; and we recommend—That the arrangement made by the Building Act Committee for dangerous and neglected structures in North-east Hackney to be surveyed by Mr. H. Lovegrove be approved."

This was agreed to.

The Council adjourned soon after 7 o'clock.

THE LANCASHIRE FEDERATION OF BUILDING TRADE EMPLOYERS.

THE second annual general meeting of this Federation was held at the Palatine Hotel, Blackpool, on the 13th inst. The President, Mr. John Fecitt, Blackburn, was in the chair, and there was a large attendance of representatives from Accrington, Ashton-under-Lyne, Blackburn, Blackpool, Burnley, Chorley, Colne, Darwen, Nelson, Oldham, Preston, Rochdale, Stalybridge, &c.

The minutes of the half-yearly general meeting held at Blackburn in December last were read and confirmed, and the report was unanimously adopted. In the report the Committee referred to the progress made in strengthening the Federation during the half-year. Two local Associations, Ashton-under-Lyne, Stalybridge and district, and Blackpool, had joined during the past six months, and others were expected to do so shortly. The relations between employers and operatives were reviewed at some length, and details given of the changes in rates of wages, hours of labour, and working rules. The Treasurer presented his accounts, which were considered very satisfactory, and the balance sheet was adopted and ordered to be printed.

Mr. W. Cunliffe was unanimously elected President of the Association for the ensuing year, receiving the nomination of the majority of the branches. Mr. James Storrs, Stalybridge, was elected vice-president; Mr. F. W. Briscoe, Bolton, hon. treasurer; and Messrs. W. Shepherd, Rochdale, and J. Hawley, Colne, hon. auditors. The representatives elected by the branches on the Executive Committee were approved. The Secretary (Mr. J. Tomlison, Preston) reported that counsel's opinion on the form of indenture of apprenticeship selected for adoption by the Executive Committee had been received, and in consequence of that opinion an amended form had been drafted by the solicitors. The form was duly considered and adopted for use in the federated towns. It was decided to amend the rules to give the Executive more control over the affiliated Associations, and to elect an Emergency Committee to deal with disputes and matters of urgency.

Other business of interest to the trade was considered, and suggestions dealt with as to the best method of strengthening the Federation and extending its influence, while reports of dispute were received from the various branches.

A hearty vote was passed, thanking the retiring President for his services during the year, and for his exertions in forming the Federation, and Mr. Fecitt having suitably responded, the meeting terminated. The next quarterly meeting will be held at Darwen in September.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board have sanctioned appointments or re-appointments of sanitary inspectors, as follows:—Mr. J. Bullock in Poplar, Messrs. T. L. Davies and H. M. Cockburn in Rotherhithe, and Mr. W. Firth in Shoreditch. Re-appointments of the various inspectors in Camberwell.

THE LONDON BUILDING TRADES DISPUTE.

THE labourers assembled in the Holborn Town Hall on the 11th inst. to consider what steps they should take in the face of the Master Builders' threat to withdraw their offer of a farthing an hour advance if not accepted before June 16. Mr. W. Thorne presided. After the situation had been explained by the officials of the union, a resolution was submitted to the meeting proposing that the matters in dispute be submitted to arbitration, the arbitrators to consist of delegates from the labourers and of representatives of the Central Association of Master Builders; and that, pending their decision, the men should return to work. This proposition was unanimously vetoed by the men. The following resolution was then proposed by the Executive:—"That this meeting of builders' labourers now on strike refuse to accept the offer of the farthing advance per hour made by the Central Association of Master Builders, and hereby pledge themselves to resume work on the old terms without the signing of the new rules on Monday next, June 16, providing the halfpenny an hour is not conceded in the interval." This proposition was carried by the men.

At a further conference between the representatives of the Standing Committee on Trade Questions of the Central Association of Master Builders and the Sawyers' and Wood-cutting Machinists' Union, held at 31, Bedford-street, Strand, W.C., for the purpose of arriving at a settlement of the dispute between the two parties, Mr. H. Holloway (Chairman of the Master Builders' Association) presided. Mr. J. Gay (General Secretary of the Union) stated that the men were willing to accept similar terms as those granted to the carpenters and joiners and other trades. After some discussion the following rule with reference to the employment of unionists and non-unionists was agreed to by the members of the conference:—

"That in the event of an objection to the employment of any workman, no strike shall take place prior to the matter being referred to, and decided by, the Board of Conciliation, whose decision shall be final and binding."

The master builders also conceded the advance in wages of ¼d. per hour. Arrangements were afterwards made for the constitution of the Board of Conciliation to be composed of an equal number of representatives of both masters and men.

ARCHITECTURAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS. — The annual excursion of the members of this Society took place on the 13th inst., when a large number visited Wentworth House, by special arrangement. The party drove through Ecclesfield and Chapeltown, and through the park to Wentworth, where luncheon was provided at the Rockingham Arms. Among those present were Mr. C. Hadfield (President), Mr. C. J. Innocent (Hon. Secretary), Mr. E. M. Gibbs, Mr. B. Bagshawe, Mr. T. H. Waterhouse, J P., Messrs. T. Winder, C. B. Flockton, J. R. Wigfull, T. Firth, A. H. Holland, W. F. Hemsoll, J. Smith, J. T. Cook, C. F. Longden, J. Norton, C. F. Innocent, W. Potts, T. Myles, C. M. Hadfield, H. Dawson, W. J. Beall, S. L. Chipling, S. Gibson, F. W. Chapman, J. C. A. Teather, A. Mayser, E. C. Skill, F. W. Brook-Greaves, and others. The exterior of the beautiful seat of the Fitzwilliams was first carefully examined, and then the party had the opportunity of seeing the interior. Not only were the state apartments open to the examination of the party, but the private apartments were thrown open, and their architectural design, furniture, and pictures explained. The plans and detail drawings of the various parts of the building were produced for the use of the party, and explained by Mr. W. Dickie, the clerk of works, who has been resident at Wentworth, with charge of the works, for thirty-three years, and who, with the assistance of his son, Mr. George Dickie, explained the plans and buildings to the members of the Society. The cellars were also visited as well as the gardens. Then the stables, for eighty horses, the carriage houses, and the riding school were seen. The new church, built at a cost of about 25,000*l.*, from the designs of Mr. J. L. Pearson, was very much admired. The old church, with its many valuable monuments, was also inspected. An adjournment was afterwards made to the Rockingham Arms, where tea was provided. The mausoleum, with its sculpture, was taken on the way home. A very hearty vote of thanks to

Earl Fitzwilliam for his kindness in allowing so many facilities to the party was passed, on the motion of the President, seconded by Mr. T. H. Waterhouse, J.P., and a cordial vote of thanks was passed to Mr. Dickie, on the motion of Mr. E. M. Gibbs, seconded by Mr. B. Bagshawe, Deputy Coroner, for making arrangements for the visit in conjunction with the hon. secretary, and for successfully conducting the party.

NORTHERN ARCHITECTURAL ASSOCIATION.—On Saturday last week the members of the Northern Architectural Association held their annual excursion, the places visited being Haggerston Castle and Holy Island. The President (Mr. A. M. Dunn) and the Vice-President (Mr. F. W. Rich) were unable to be present. On arrival at Beal the members were met by conveyances which took them to Haggerston Castle. Haggerston Castle was formerly the home of the family from whom it took its name, but about thirty years ago it passed into the hands of Captain Leyland, and subsequently to its present owner. A visit of the Architectural Association was the more interesting because of the important additions and alterations which are being made at the Castle, and which were commenced nearly four years ago, and are not expected to be completed for another two years. The architect is Mr. R. Norman Shaw, and the contractor Mr. Walter Scott, Newcastle. The building is in the English Renaissance style, and is built of stone quarried locally. The additions which are being carried out consist of a circular entrance-hall, 35 ft. in diameter, leading to a groined corridor, at the end of which is a large glazed corridor, connecting a high tower with the main building. The tower will have a smoke room at the base, water tanks in the middle, an observatory on the fourth floor, and a flat above. Returning to the main building, the large hall will be a fine room. The screen is of Denwick stone arches, faced with Irish green columns, the top forming a balcony for an orchestra. The hall will be fitted with a French springing floor, and a fixed margin, and the walls are to be panelled in walnut. In addition, there are new servants' halls, kitchens, &c., and a billiard-room. The dining room and library floors are to be treated with Rhondona marble pilasters, with Hopton wood bases, and the centre staircase will be an elaborate one. An open court, which is to be decorated with flowers, is also a feature of the castle as re-constructed. Messrs. Wenham & Waters, Croydon, have the installation of the electric light in hand. Mr. Tom Atkinson, who represented the contractors, explained the various points of interest. Having spent considerable time in the castle, the members of the Association had lunch on the lawn, and then walked through the park. Taking their conveyances, the party afterwards drove to Holy Island, where they were met by the Vicar (the Rev. John Bryson), who showed them through the church and priory. The first Bishop of Lindisfarne was St. Aidan, who founded the see under St. Oswald, and sat as Bishop from 635 to 652. The walls of the old Norman church are of a hard but coarse sandstone, of a dark reddish colour, and it is of this stone that almost the whole of the abbey is built. The lower part of the walls of the north transept, the north side of the nave in one or two places, and the lower portion of the west wall of the choir, on the south side, are, however, pieces of masonry of a different character, and inferior to the Norman work. It is supposed that this inferior walling was part of a former church, and was left when the Norman building was set out. The many objects of interest in the church and abbey having been seen, the old castle was visited, after which the members of the party sat down to dinner at the Northumberland Arms. The party arrived in Newcastle at 10.5 p.m.

COMPETITIONS.

EXTENSION OF MUSEUM, LIVERPOOL.—Mr. Aston Webb is the assessor in the competition for the extension of the Museum in William Brown-street, Liverpool. A large number of designs have been sent in. The structure will cover the ground between the existing Museum and the corner of Byrom-street, which is now occupied by a group of buildings.

MUNICIPAL LODGING HOUSES, ABERDEEN.—Eleven competitive designs have been lodged for the proposed Corporation Lodging House, East North-street, Aberdeen.

BURNS NATIONAL MEMORIAL, MAUCHLINE.—The executive of the Burns National Memorial Committee has, it is stated, selected the plans of Mr. William Fraser, A.R.I.B.A., Glasgow, and the foundation stone of the proposed National Memorial at Mauchline will, it is expected, be laid on July 23rd.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE recommendations in regard to the following applications under the London Building Act, 1894, were agreed to at the last meeting of the London County Council. Conditions are attached to those applications which were agreed to, but which we have no space to print :—

Lines of Frontage.

Hackney, North.—That Messrs. W. Bradbear & Co. be informed that their application on behalf of Mr. G. Hawkins, for the consent of the Council to the erection of a one-story shop on a portion of the forecourt of No. 2, Belle-vue-place, High-road, Upper Clapton, together with the plan, dated 6th June, 1896, submitted by them, having been further considered, the Council sees no reason to depart from its decision of 5th May last not to grant the application; as, in addition to the other objections, no offer is made to dedicate to and leave open for the use of the public the portion of the present forecourt of the premises shown on the plan to project beyond the line of the proposed shop.

Wandsworth.—That consent be given to the erection of the flank of a house on the north side of St. Ann's-hill, to abut upon Allfarthing-lane, on the application of the Board of Works for the Wandsworth district.

Westminster.†—That consent be not given to the erection of an addition at the first-floor level, in front of No. 34, Grosvenor road, Pimlico, on the application of Messrs. Green and Abbott, on behalf of Lady Henry Somerset; it being considered inexpedient to permit the main frontage of the buildings adjacent southward to be disturbed by the erection of the addition as proposed.

Cubical Extent.

Bermondsey.—That, subject to the provisions of Section 76 of the London Building Act, 1894, consent be given to the erection of an open iron shed over the tan-pits at the tannery in Horney-lane, together exceeding in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the trade of a tanner, on the application of Messrs. Croggon & Co., on behalf of Messrs. Edwin Ellis and Co.

Note.—The recommendation marked † is contrary to the views of the Local Authority.

Books.

Handbook for Travellers in Greece. Sixth Edition. London: John Murray. 1896.

THE last edition of Murray's Greece (1884) was too cumbersome for the hurried travellers of our day. Its two volumes have had to give place to one. The old edition was strongest in its historical and literary side; weakest in its archæology, its maps and plans. The balance has now been redressed. The new maps and plans are abundant, accurate, and beautiful beyond praise. The archæology, if still leaving something to be desired, shows a most welcome advance. We have excellent outlines of the history of Greek sculpture and of vase painting. The museums, especially those of Athens, are fully and well described. The latest results of excavations are summarised with skill.

On the other hand, we occasionally miss the ampler details of the old edition. Take, for example, the description of Chæronea, with its famous battle and sepulchre of the Bœotians. That is now abridged to less than a page. Formerly it covered more than two pages of most interesting matter, which there was always time enough to read as one halted at the burying-place of the 300 to admire the great lion still lying in huge fragments on the spot. It is not that we wish on every such occasion long historical extracts after the manner of Baedekers' "Greece." Something between the two would satisfy us. On page 560 we are content with the description of the famous battle of Platæa, in which the Persians were routed; but why no mention of the siege in the following century which Thucydides has rendered imperishable? That can only be an oversight.

In the section devoted to Athens we are glad to see an account of Dr. Dörpfeld's excavations on the low-lying ground between the Areopagus and the Pnyx. This has been the great event of late years in Athens, and whether Dr. Dörpfeld is right or wrong in his contention that this was the ancient site of the Limnæ or marshes, and that the remains of a great fountain which he has laid bare are those of the famous Enneakrounos, it is allowed on all hands that he has by his excavations on this spot done a signal service to the topography of Athens. The new "Murray" states the case fairly, except that it omits all reference to the passage in Thucydides (ii., 15), which has played so important a part in the discussion. As proof that the oldest part of Athens lay chiefly to the south of the Acropolis, Thucydides points to the archaic temples which existed in that quarter, as also to other archaic buildings, among which he mentions the fountain constructed by the Pisistratidæ, "now called Enneakrounos, but of old Callirrhoè." One difficulty is that Dr. Dörpfeld's fountain is on the west rather than the south of the Acropolis. Another difficulty is that among the temples cited by Thucydides is that of Zeus Olympios, which is not only directly to the south of the Acropolis, but is close to the spring which, till Dr. Dörpfeld's excavations, was considered to be the ancient Callirrhoè.

The relation of the south wing of the Propylæa to the temple of Nikè is carefully and rightly described except on one point. It should have been stated that the sculptures of the balustrade which surround the Nikè temple are distinctly later in style than the sculptures of the temple itself, thus showing that the balustrade, together with the bastion which it surmounts, had been a subsequent idea, with the view of obtaining greater harmony with the lines of the Propylæa. Some notice should also have been taken of the traces of an ancient approach along the foot of the Nikè bastion, as pointed out by Mr. Penrose in the "Hellenic Journal" for 1895. On the Acropolis itself there are still difficulties that remain unsettled. One would have liked to see them more fully stated if that could have been possible within so narrow limits. As it is, the new editor of "Murray" has steered his way with commendable discretion, and with a perfectly justifiable reliance on Dr. Dörpfeld.

It is only fair to bear in mind that students who desire to go fully into the topography and monuments of such places as Athens, Olympia, Mycenæ, Epidauros, or Delphi, have many special books easily accessible. To them a guide-book cannot serve more than a preliminary purpose. But the majority of travellers are not of this class. They require a brief, accurate statement of essentials only. To meet even this demand is a colossal task, in which slips such as we have pointed out are inevitable, till successive editions shall have finally purged them away.

To those who have become familiar with the glories of Athens and Olympia, the attractions of Mycenæ or Delphi, nothing is more delightful than a tour among the remote places of the Peloponnesus or in Northern Greece, where there are still no railways, where one moves by slow stages on ponies or mules, amid scenery of unsurpassed beauty, and for ever being reminded of momentous incidents in history. Then the guide-book becomes one's hourly companion. We must rely on it at every moment, and it is well when we can find in it exactly what we require. We do not expect every possible route to be described, just as we happen to take it. But everything that strikes us, whether in natural scenery, ruined temples or towns, must be mentioned or described in our ideal "Guide." We do not profess to have put the new "Murray" to this severe test. We can only compare it with our recollection of journeys in Greece, more or less recent, and more or less extending to the by-ways of that country. The result is that we have no hesitation in recommending this handbook as a trustworthy guide.

Thermo-dynamics treated with Elementary Mathematics. By J. PARKER, M.A. London: Sampson Low, Marston & Co. 1894.

IN addition to the preface to this work there is a short statement by the author; and as helping us to understand what kind of book he wanted to produce we give the following extracts from it:—

> A want has long been felt by non-mathematical students, technical classes, and practical men, for a text-book of thermo-dynamics which would only use elementary mathematics, and yet be fairly exhaustive. . . . The present work, it is believed, will supply what is wanted. . . . Not the least important part of the work to many students and practical men will be the *very simple* chapter on perfect gases."

We read the work keeping in view the requirements of non-mathematical students, technical classes and practical men. A more unsuitable book we have seldom come across. Practical men want a clear statement of the experimental basis

of thermo-dynamics and need numerous diagrams to help them to understand the theoretical equations. Mr. Parker slurs over the experimental basis, and the diagrams are similar to those drawn by a Cambridge "coach" on a blackboard when giving the whole theory of thermo-dynamics in an hour. The "very simple" chapter on perfect gases is far too mathematical and scholastic for a technical class, even if their mathematics were sufficiently advanced to enable them to understand it, yet it could be far better taught by means of diagrams. There is not much positively wrong in the book, but it is absurd to consider it a text-book of thermo-dynamics.

The introduction on units is treated in a very academic manner. We are told that a metre =39·370,432 in., and in the same line that an inch=2·54 centimetres. This is a little peculiarity of Mr. Parker's: he has no idea of the accuracy of measurements. Thus he will calculate tables of the latent heat of steam in ergs, giving results to seven significant figures, although the multiplier he uses is 1 per cent. too low. Again—

It has been found (Everett's "Units") that the density of mercury at 0° C. is 13·5956 times that of water at 4° C. It is, therefore, 13·595,776,74 grammes per cubic centimetre.

The mere process of multiplication apparently increases the accuracy of the observation ten thousand times.

Chapter I., on the conservation of energy, is accurate, but is very uninteresting reading. It would puzzle a glass-blower to make a Bunsen's calorimeter like the one the author has drawn. Chapter II., on perfect gases, is suitable reading for students preparing for the Natural Science Tripos at Cambridge. Chapter III., on Carnot's principle, is good, and shows distinct, although somewhat eccentric, originality, it being applied to vegetable and animal life. Chapter IV. contains applications to an unelectrified body at rest, and is very uninviting reading. It finishes with an account of Gibb's geometrical test of stability condensed into five pages. Chapter V., on tidal friction, might very well appear in a treatise on rigid dymanics or astronomy. It may be useful to amateur astronomers.

The sixth and last chapter is entitled "Applications to Electricity. It is evidently the result of a good deal of hard thinking, and we are sorry we cannot report favourably on it. Mr. Parker's knowledge of electrical literature is evidently somewhat limited, and his experimental basis is far from sound. He hurries over the elementary portions, in his haste defining a joule as ten million *dynes*. His attempts to disguise the differential calculus in an algebraic garb worry one needlessly, and the notation adopted is very confusing. He proves to his own satisfaction that there is no electro-motive force of contact between two pieces of the same metal in the same molecular state at different temperatures. For this statement we are informed that

"the author has little or no independent authority to give; he has merely been informed that a similar result is given by a continental investigator."

It strikes us that the author has proved too much. He has proved not only that there is no electro-motive force of contact, but also that the hot and cold portions of the wire are at the same potential. Now we always understood that the Kelvin effect proved that parts of a conductor at different temperatures must be at different potentials, so if Mr. Parker's result were true, there would be no Kelvin effect. Apart from this, his proof is quite unconvincing, his assumptions being questionable.

In the appendix an extraordinary collection of tables is given. There is no method in their selection or arrangement, and they seem merely added to give a practical look to the book. Mr. Parker cannot take the trouble to consult the original authorities, although he has them all at hand in the University Library, and so we have, for example, Ewing and MacGregor's "Tables" recopied from Mascart's "Electricity and Magnetism"!

If Mr. Parker wishes to write a text-book suitable for practical men or technical students, he must remember that the premisses, as well as the conclusions, are wanted, and that the intermediate reasoning, while being excellent mental gymnastics, is comparatively unimportant to them.

Griffin's Electrical Engineer's Price-Book. Edited by H. J. DOWSING, M.I.E.E. New edition. London: Charles Griffin & Co. 1896.

THE new edition of this work is better than the first, but there is still plenty of room for improvement. A good deal of obsolete matter has been omitted and there are considerable additions. Mr. Dowsing has arranged the book in two parts. In Part I. the prices and particulars of machinery and apparatus used by electrical engineers are given, and in Part II. useful information concerning the supply of electrical energy and general hints as to the methods of carrying out electrical work. To electrical engineers the work will be valuable, as it contains in a handy volume the preliminary information which will often save them the trouble of searching through a file of makers' catalogues. It would have been more valuable if some reference had been made to such important subjects as high-voltage lamps, motor generators, rectifiers, interior conduit-wiring, Tudor accumulators, Jandus arc lamps, inverted arc lamps, Goolden or Silvertown testing sets, &c.

To engineers, architects, builders, and Local Authorities the work will prove useful, as it contains the latest regulations of the Board of Trade (1896), sample estimates, and fire insurance regulations.

We were amused with the section on lightning conductors. It is there gravely stated that iron conductors must be eight times as heavy as copper, because copper conducts eight times better than iron. The writer evidently thinks that the resistance of the wire is the main obstacle to the path of a lightning discharge.

The Factory and Workshop Acts Explained and Simplified. By E. M. ROE, her Majesty's Inspector of Factories. London: Simpkin & Co., Limited. 1896.

So many persons ought to know the provisions of the several Factory Acts that this little book will be useful. Persons cannot be expected to wade through technical statutes, but every one interested in factories can have this little book on his desk or in his pocket. The work gives in short and clear language the meaning of the Factory Act of 1878 and subsequent amending Acts, and since its publication there is no excuse for an ignorance of the law on the subject by those who ought to know it. But is the author correct in describing his work as the Acts explained and *simplified*. He may have explained them, but the only way Acts of Parliament can be simplified is by repealing them and re-enacting them in clearer language. A very full index is a valuable feature of this book; the best précis in the world is thrown away if the index is faulty.

R. Harding's Guide to Factory Workshop, Job, and Contract Bookkeeping. Ilford: R. Harding.

THIS is not exactly a book, but a sheet, or chart, which aims at showing by a graphic method the principle on which accounts should be kept in connexion with large works, and the persons who should be responsible for the entry of each class of items. For those whose heads are not clear as to a system of keeping accounts it presents the whole thing in a very clear manner.

Dickens's Dictionaries of London, 1896-7; *and the Thames*, 1896. London: T. Smith.

THESE are two very useful little books, whose annual appearance—that on "London" has reached its eighteenth year of issue—the general public are now accustomed to expect. Each is described as "an unconventional handbook," and neither of them professes to deal more than lightly with topics of purely architectural or antiquarian interest. Nevertheless there are several passages in the "Dictionary of the Thames," which should enable one to considerably increase the enjoyment of his trip or sojourn "up the river," whilst to the lover of nature we recommend the articles on the botany, geology, and ornithology of the Thames. The other volume contains a multifarious amount of information calculated to meet all modern requirements, and much that will prove serviceable to even the accustomed resident in the town. We have noticed some mistakes here and there, but they are not of a kind to affect the book's practical utility. The interleaved advertisements are not many, it is true; but we think Mr. Charles Dickens would be better advised to omit them entirely.

TRADE CATALOGUES.

MR. J. MARSTON (Wolverhampton) has sent us a book of designs in wrought-iron work for lamp hangings and signs, as examples of the class of work carried out by this firm.——The Aberdeen Steamship Navigation Company send us their pamphlet, "On Sea and Shore," a kind of illustrated guide to the trips about Scotland which may be made in their steamers.——The Arragon-road Joinery Company send us a large sheet of sections of their wood mouldings.——Messrs. Lumby, Son. & Wood send us what they say is the first introduction of a price list for boilers of steel—boilers for domestic work we presume they mean. These include bath and range boilers made from Siemens's mild steel boiler plates.

Illustrations.

SCULPTURED PANELS, COUNTY HALL, STAFFORD.

THESE panels, which are at present in the Royal Academy exhibition, have been executed by Mr. Schenck as decorations for the new County Hall for Staffordshire. The figures are symbolical respectively of Agriculture, Mining, Ironwork, and Pottery.

DURHAM COUNTY BUILDINGS.

WE publish the design submitted in competition for the County Buildings by Mr. E. R. Robson, which is of Classical treatment, suitable to the old street in which the building is to stand.

In the plan the public entrance is placed at the nearest point to Elvet Bridge and the city itself; that for members being at the opposite or more remote end, near the Assize Courts.

The key of the planning depends upon an elliptical council chamber, adopted by preference for convenience, acoustics, and beauty.

Like many other competitors, Mr. Robson, partly because of the great delay which occurred and partly because the assessor was not a London architect, withdrew his plans before the public exhibition took place.

Our view is taken from the drawing which is now being exhibited at the New Gallery (where, as architect of that building, Mr. Robson is usually allowed a place, although architectural drawings are not encouraged, as a rule*), and is from the pencil of Mr. John Fulleylove, R.I., the well-known water-colour artist, whose recent exhibition of drawings taken in Greece has been one of the features of this year's exhibitions.

MARYLEBONE NEW PUBLIC BATHS AND WASHHOUSE.

THE building in Marylebone-road comprises four swimming baths, 110 warm baths, public washhouse and laundry with eighty washing compartments, towel laundry, superintendent's apartments and board-room.

The present Pompeian swimming bath has been lengthened to 100 ft., so as to make it a good racing bath. A gallery is provided all round the bath. The old entrance will be used for the public on the occasion of swimming entertainments.

The new general entrance is at the west-end of the bath, access being obtained from the Marylebone-road by means of a wide corridor.

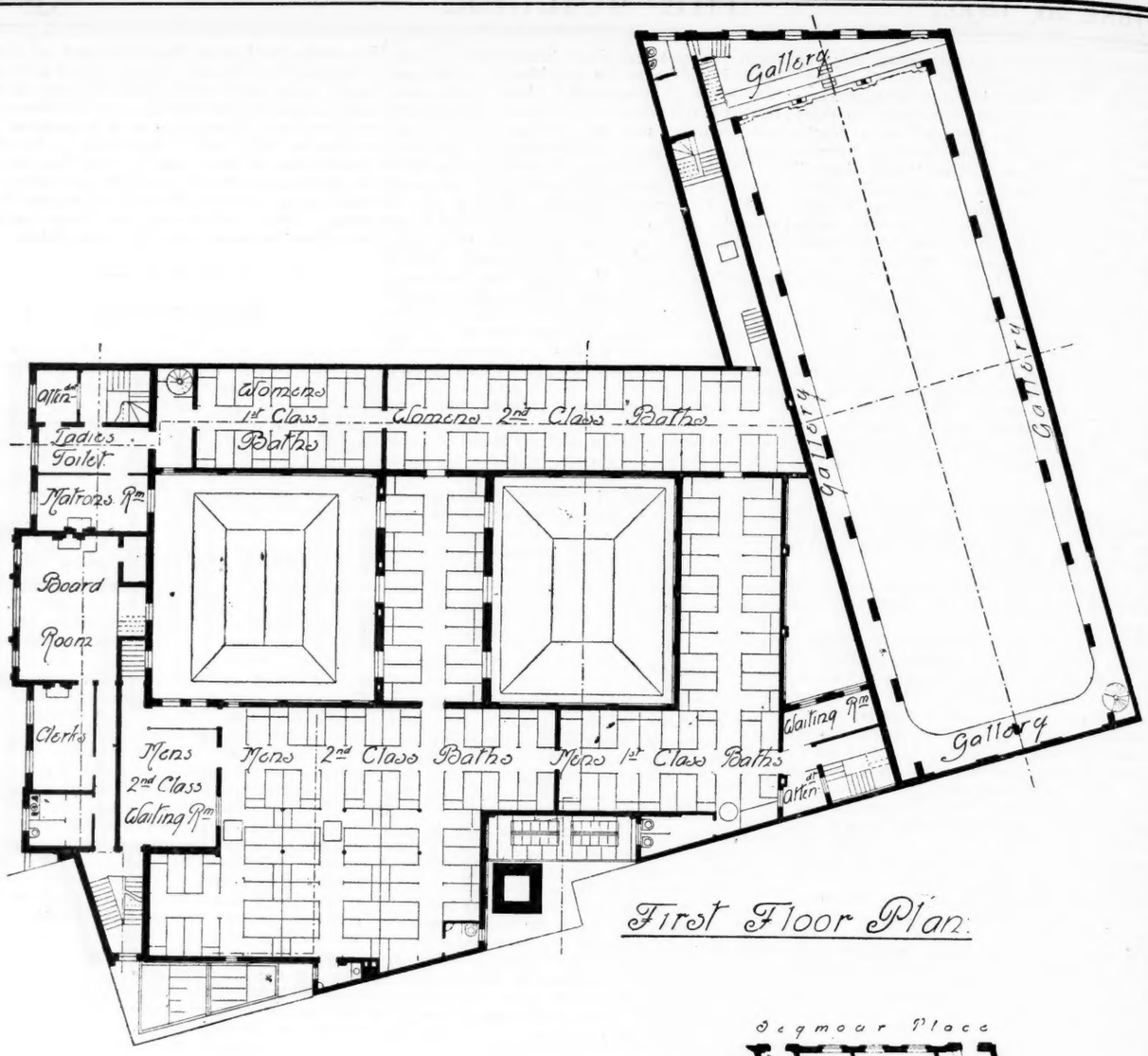
The ladies' swimming bath is 60 feet in length by 24 feet wide and has thirty-five dressing boxes. A gallery runs round the bath on the top of the boxes. The bath will be lined with white glazed tiles relieved with painted tiles, in the same style as the first-class men's bath. It will be surrounded by a marble curb and the footways will be tiled.

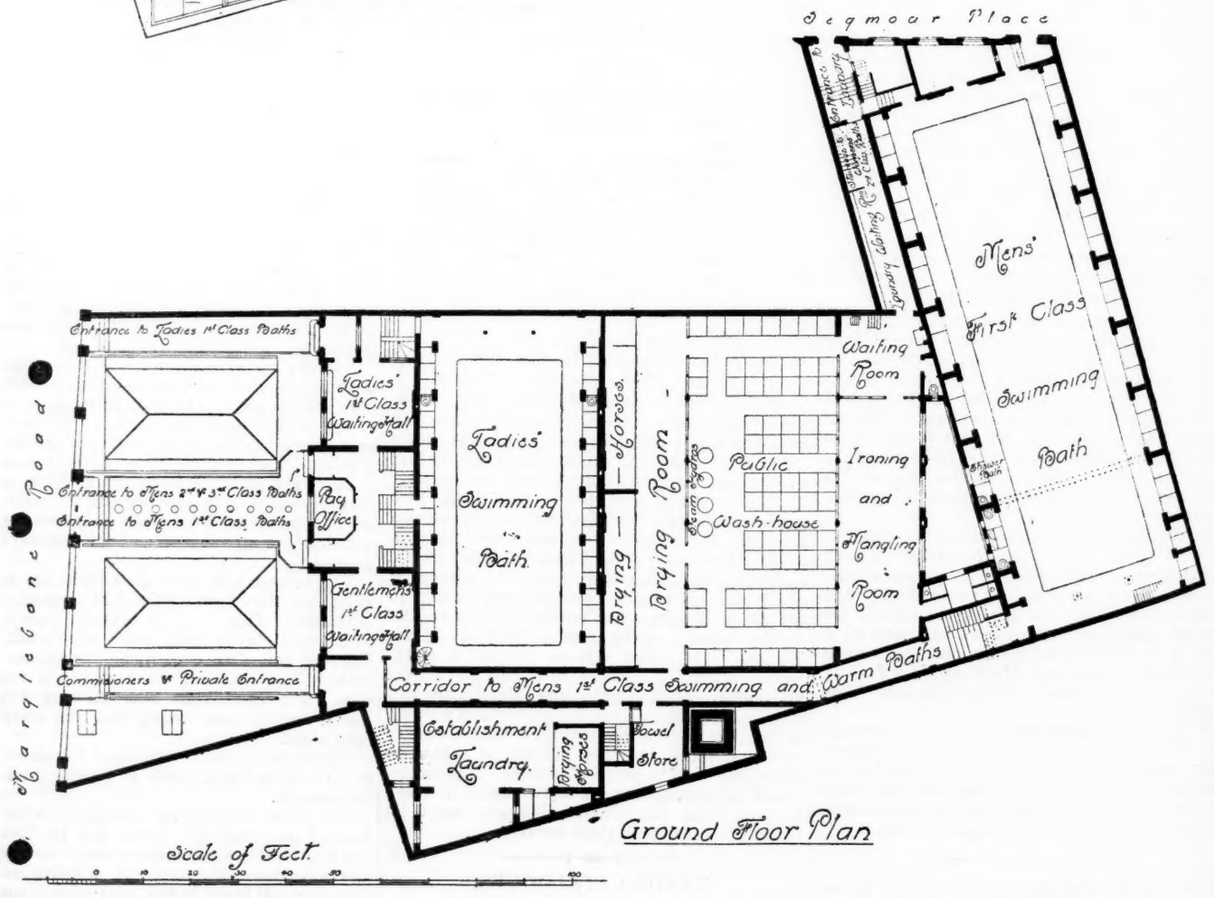
The second and third class baths are placed in front of the administrative building and in the basement. They will be finished plainly, but well, with glazed brick walls all round, tiled footways and slate curb round the baths. The baths will be lined all round with white glazed tiles. The second-class bath will have fifty-four boxes and a club room, and the third-class forty-eight.

All the baths will be ventilated by electric fans, and a soap and spray bath is provided for each department.

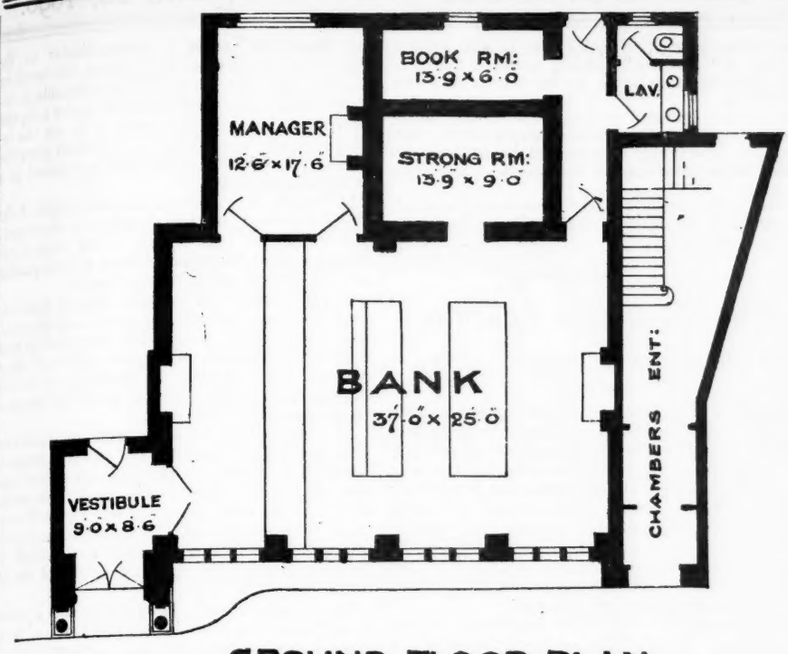
The warm baths are all contained on the first floor of the building. There will be baths for ten first-class and nineteen second-class women, and twenty-six first-class and fifty-five second-class men, all fitted in the most perfect manner, and exceptionally large. The baths will be of

* This drawing is, in fact, the only architectural exhibit at the New Gallery.





St. Marylebone Public Baths.



GROUND FLOOR PLAN

Bank for the Leicestershire Banking Co. Plan.

porcelain, enamelled inside, and with teak tops and enamelled slate risers.

The washhouse is arranged with six double rows of washing compartments, the tubs in all of which are so placed that the women will all face one way, *i.e.*, looking towards the drying-horses, which are all placed in a row in full view from the washhouse, and separated from same only by a glazed screen. Each woman will have two tubs fitted with hot and cold water and steam supplies. Four over-driven wringing machines are placed in the centre under the control of a responsible officer. The drying-horses will be heated by large coke furnaces, fed and stoked from the basement.

The entrance for women will be from Seymour Place through a waiting room. The washhouse is lighted by a very large lantern, and ventilated by a large fan.

The boiler house, engine room, coal stores, &c., are placed beneath the washhouse, laundry, &c. The various machines will be driven from a powerful engine.

The towel laundry will be fitted with twelve drying horses and two washing machines, besides wringers, washing tubs and steam ironers, &c.

Storage room is provided in the basement for sixty tons of steam coal, ten tons of house coal, and nearly as much coke.

The front administrative building contains on the ground floor a double entrance for men in the centre, a separate entrance for ladies and another for the superintendent. Between the entrances are two waiting halls, respectively for first-class men and women. The main entrances lead into a large and lofty hall, with a central pay office, and staircases giving access to the second and third-class swimming baths and the second-class warm baths (men).

On the first floor there are the board-room, superintendent's office and lavatory, and the second floor is devoted entirely to the superintendent's apartments.

Externally the building will be faced with Portland stone up to the first floor level, and above that with Redbank bricks, relieved with Portland stone dressings, cornices, strings, &c. The courtyard in front will be paved over—except where the skylights are over the swimming baths—with broad pathways up to the entrances paved with mosaic.

The builder is Mr. Charles Wall, of Chelsea, who has contracted to carry out the work at a cost of 43,800*l*. The architect is Mr. Alfred Saxon Snell, of London.

NEW PREMISES FOR THE LEICESTERSHIRE BANKING COMPANY.

THE bank shown in the illustration has been erected from the designs of Messrs. Goddard, Paget, & Goddard, for the Leicestershire Banking Company.

The front is of Portland stone, and the roof covered with Smithland slates. The lobbies and the space for the public are laid with marble mosaic. The entrance lobby is panelled in teak, which is also used for the bank fittings. The bank apartment is panelled in yellow pine, stained and French polished.

Strong rooms are vaulted and lined with white glazed brick, the walls being built in blue brick, and cement, with layers of bond iron built in.

Four sets of chambers, to be let off, are provided over the bank, and caretaker's rooms on the top floor.

The general contractors were Messrs. Moss & Son; the strong-room doors are by Messrs. Chubb; the mosaic pavement by Messrs. Maine & Co.; the carving by Messrs. Barfield & Moore; the metal work by Messrs. Elgood Bros.; the Terazzo pavement by Messrs. Farrar; the teak furniture by Messrs. Henson of Wellinboro'; and the teak work in vestibule and bank by Mr. Harding.

The bank is at Loughborough, not at "Leicester" as stated on the title of the plate, a mistake for which the architects must be held responsible, as they did not mention the fact in sending us the particulars, and we naturally concluded, in the absence of any statement to the contrary, that a bank for the Leicestershire Banking Co., by Leicester architects, was in that town.

THE MEMORIAL CHURCH TO ALEXANDER III. AT BORKI.

THE memorial church at Borki owes its erection to the escape of Alexander III. and the members of his suite on the occasion of the great railway accident on the Kursk-Cracow line. The necessary funds for this memorial of his preservation were raised by public subscription, and the work was entrusted to a member of the Russian Academy, Professor Robert Marfeld, of Saint Petersburg, to whom we are indebted for the accompany illustrations and the needful particulars. The works were commenced in 1891, but, although the church was consecrated in 1894, much of the decoration is still unfinished.

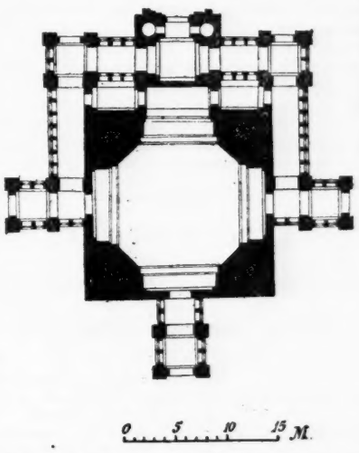
In connexion with the Imperial church there is a small chapel, which has been erected on the exact spot where the Imperial carriage fell from the railway embankment. The grounds on which the memorial church and chapel stand are being laid out as a park, in which 70,000 trees have already been planted.

The plan of the memorial church explains itself, and it is well adapted for the purpose which it is intended to fulfil. Its capacity is for a congregation of 700 persons. The height of the cross from the ground is 47 metres, or more than 150 ft., and the diameter of the inner cupola about 37 ft.

The style adopted by Professor Marfeld is the so-called modern national Russian—a kind of renaissance of the old Russian period modified and adapted to the purposes of the present age. A large number of excellent mosaics and pictures have already been placed in the church, of which a fine mosaic presented by the nobility of Orel is the most important. The total expenditure has been 340,000 roubles. M. Welitschko was the clerk of the works.

In connection with this subject we may offer a few remarks on the state of building work in Russia, which is rather peculiar. The fearful catastrophe at Moscow has directed attention recently, in an only too sensational manner, to the want of management, the prevalence of red-tape officialism, and the remarkable want of initiative on the part of individual officials. This bureaucracy and want of initiative makes itself severely felt also in the building operations of the country, and hampers the private architect, not only in the execution of the work entrusted to him, but also in the furtherance of the education of his juniors, and of the artisans, and craftsmen, and the members of the various trades. The art-workman is practically left to his own resources, or, at the most, pays a visit to France. The workman, to whom the boon of guilds or societies for technical education is almost entirely unknown, is left to pick up what knowledge he can, and at the most learns what his father has learnt before him, without there having been any progress in the last decades; if, indeed, there has not been retrogression.

As in this country, the work is in the hands of a general builder, or at least the principal parts of it, such as the bricklaying, masonry, plaster-work, timber-work, and joinery. The builder, however, need not have any technical training, and one



Memorial Church, Borki, Russia. Plan.

often hears of men taking up the work who have no knowledge whatever of building. There is a foreman in chief for every job, whose duty it is also to look after the housing and feeding of the workmen, who as a rule have some kind of temporary accommodation found them on the works. The hours are exceedingly long, commencing as early as four or five o'clock in the morning in the summer, and lasting till eight o'clock in the evening, for which the pay in the case of so-called skilled labour does not exceed a rouble, or about three shillings. In judging this rate, however, one must remember that only half as much work is done in these long hours per day as is done in the shorter hours by our best British workmen, and that the labour on a building is hence, after all, not so very much cheaper than here as one would expect. Drink is one of the greatest plagues in the builder's yard, and this vice, combined with the workmen's great ignorance of their work, their laziness, carelessnes with their tools, unreliability, and absolute lack of initiative, make matters exceedingly unpleasant for the employer and the architect. The majority of bricklayers have, for instance, no knowledge of any kind of bond, nor do the masons give much consideration to bonding, even in worked stone or rough work. Such bonding as is done generally has the assistance of some strips of iron, and if the employer wishes to attain extraordinary substantiality in his block, he practically orders sufficient bands and wiring to be put into the brickwork to make the whole appear like a network. The carpenter has little or no idea of constructing a truss, and for the matter of that, of any elementary construction from our point of view. The commonest facts in regard to stresses and strains seem entirely unknown to him, and the makeshifts which result

require an enormous quantity of timber, and the use of endless ties (with the aforesaid iron bands) for holding the timbers together. As regards the joiner, he seems to rely entirely upon the painter to cover up his joints, and it is rare indeed to find what we term a true mitre.

Roofing in slates or tiles is by no means so common as roofing in metal, and one finds that the average house has either iron or zinc to keep the weather out. It would be well to note that all ironwork on the roofs is painted, and that zinc where used does not stand the great difference of temperature between the hot summer and the cold winters. Where tiles are used they are generally coloured, and some decorative pattern is worked out. Speaking of the materials used, it is perhaps curious to remark that the wood is by no means what one would expect from Russia. All the best material goes to foreign markets, and it is seldom that one sees really good baulks of timber in towns like St. Petersburg, Moscow, and Warsaw. The bricks used would not be passed by any English clerk of works, both as regards to strength and surface. In respect to the surface it would be well to add that stucco is so much used on the façades of the modern Russian building that there is little inducement to the brick-makers to give attention to good colour and texture. In expensive work, of course, some beautiful freestones will be found, also marbles and very good granite; these being brought to the towns at a heavy cost; but the various local freestones are as a rule unsatisfactory.

Russian architecture is well worth the attention of English architects on account of its picturesque features and the great originality shown in the designs of some architects; but as regards practical matters even the new church at Borki cannot be useful to us. It must be remembered, however, by those who wish to sketch, that for such a purpose special permits and good introductions are essential; if the pencil be used conspicuously without the sanction of the authorities, the draughtsman will almost invariably have to make the acquaintance of a police-station, if not of its cells.

Correspondence.

To the Editor of THE BUILDER.

KING'S NORTON CEMETERY COMPETITION.

SIR,—On April 27 last I submitted designs for cemetery buildings at King's Norton in a competition promoted by the District Council. The conditions were ordinary ones, with premiums of 50*l.*, 30*l.*, and 20*l.* offered. My plans were returned about a month ago with an intimation that they were not accepted, and nothing further. I wrote, asking the names of the premiated competitors, and received no reply. Neither have I seen any notice of the result of the competition in your columns. A friend of mine is in like situation.

Of course, if one goes in for competitions one is bound to take one's chance, but it would seem to be only common courtesy to unsuccessful competitors to let them know that at least the premiums have been paid, and to whom.

CHARLES A. NICHOLSON.

*** We may add that the refusal to answer reasonable inquiries always leads to a suspicion that there is something wrong in the conduct of the competition.—ED.

UTILISATION OF WASTE HEAPS.

SIR,—A friend has called my attention to your kind notice of my patented plan of dealing with waste heaps.* Whilst thanking you for the notice, I see that you take exception to the term "brick."

Strictly speaking, a brick is a factitious stone, and, as shown by its Anglo-Saxon derivative, *brecan*, covers a variety of substance.

The adobe dwellings were really constructed of brick. Amongst the Babylonians, Egyptians, and other Easterns sun-dried manufactures were called bricks. To-day amongst bakers a penny "brick" is a well-known article, and amongst housewives the Bath or scouring "brick" is not unknown; but in neither of these two cases is the article used for building.

I gather, too, that "for a certain class of work" you have no objection to materials as used by me. If by this is meant an inferiority I would state that I have seen many well-made and well-burnt bricks suffer by weather where goods of my manufacture stood unharmed; and even burnt bricks that had received a coat of tar presented a sorry sight.

With reference to what constitutes a "sanitary" brick or block, I would say that even the presence of deleterious matter at the first stage of manufacture is soon converted by the permeation of lime. The potency, *e.g.*, of quick-lime is well known. And as to "porosity," pressing would, I think, so combine the material as to leave little room for interstices.

I am very grateful to you, however, for having pointed out at the close how necessary it is that a rich hydraulic lime should be used, and that the inexperienced should be warned of the activity of high-class limes.

This is the very reason why I have urged so much attention to the slaking of the lime preparatory to being used.

JOHN T. FRYER.

* See *Builder*, Feb. 22, page 157.

The Student's Column.

CARPENTRY AND JOINERY.—XXIV.

BEVELS.

ANY angle that is not a right angle or an angle of 45 deg. (termed a mitre) is called a *bevel* angle. The exact angles which pieces of stuff make with adjoining pieces of stuff have to be accurately formed by the craftsman before they can be fitted together. The manner of finding the bevels (or *cuts* as they are called) as applied to different constructions is outlined in the following remarks, by which it will be seen that it is in general a simple matter, requiring only a sound knowledge of solid geometry.

Following the principle of tabulation adopted throughout these articles as being most easy of comprehension, we may roughly class our remarks under :—

1. Bevels for simple oblique work.
2. Bevels which occur in hip roofs.
3. Bevels which occur in valley roofs.
4. Bevils for purlins.
5. Bevels to splayed window linings.
6. Bevels to louvre frames, &c.

The instrument or tool called the *bevel* has been already described and illustrated in a previous article, fig. 29. It consists of a stock made of hard wood with brass mountings at each end and a blade held together by a screw pin. The blade is made of a parallel plate of steel, with a slot allowing it to move up and down on the screw pin at the end of the stock which passes through this slot. The slot in the stock permits the blade to be pivoted completely round on the screw pin, and as it can be tightened in any position any angle can be made between it and the stock.

1. *Bevel for Oblique Work.*—The simplest kind of bevel which the craftsman will have to perform may possibly be something like that shown in fig. 404, in which a vertical post is kept in position by a stay or strut which is inclined to the ground at an angle of 60 deg. As this strut has its side parallel to the plane on which its elevation is drawn, it will be seen that the true length and correct bevels are shown in elevation, and are indicated by the thick lines enclosing the angle at which the strut has to be sawn at the top and the bottom. This is, perhaps, the simplest case it is possible to imagine, as the bevel can be at once set at 60 deg. for the lower angle and 30 deg. for the upper.

Fig. 405 shows a similar post, but in this case the strut has its sides at 45 deg. to the vertical plane. To construct the elevation draw the line *mn* to this inclination, and on this line draw a section of the strut to find the necessary angular points in elevation, which will be obtained by drawing lines through these points. The plan is projected from the elevation as indicated.

In order to obtain the bevels, the true length of the edges, being seen in elevation, it is necessary to develop the sides; this is effected by turning round the side *ab*, as shown, and drawing a line parallel to *mn* through this point from *m*, draw *mx* at right angles to *mn* then draw from *x* to *p*, and the necessary bevel is obtained. In the same manner for the bottom bevel draw a line from *n* perpendicular to *mn*, and from the point where this cuts the developed edge, draw a line from *q* which will give the required bevel.

The bevels for the underside of the top and bottom junctions with the posts are obtained in a similar manner.

Fig. 406 shows a similar post and stay; but in this case the post has its sides making an angle with the vertical plane. Draw the line *mn*, showing the true inclination of one of the edges in elevation; on this line draw the plan as in the previous examples and draw the edges *pq* and *rs* parallel to the first edge; the point *p* in elevation is obtained by drawing a perpendicular from the point where it touches on plan; join *m* to *p* and *p* to *r*.

To find the bevels, develop the side and draw the line from *m* to *o* perpendicular to the edge *mn*, join *p* to *o*, which gives the bevel for the top side; the bevel for the under side is obtained similarly by developing the under side, and drawing a line from the point *r* to cut the developed edge in *x*; join *p* to *x*, which gives the necessary bevel; the lower edge is obtained in a similar manner.

In finding these bevels, the true length of the edge is obtained, and then the sides are developed; and where the true length of the edge is not shown, it must be projected upon a plane parallel to itself, thus showing its true length.

2. *Hip Roofs.*—In its most simple form, the hip roof is a quadrilateral pyramid, each triangular side of which is a *hip*, and the rafter in each angle is a hip rafter. The *jack rafters* are those common rafters which, by abutting on the hip rafters, are therefore shorter than the length of the sloping side of the roof.

In a hip roof the following points are known:—The angle of the slope of the roof, the height of the roof, the length of the common rafters; and the points which require to be worked out are the angles which the hip rafters make with the wall plate, the angles which the hip rafters make with the adjoining planes of the roof (called the backing of the hip), and the length of the hip rafter.

As a simple case, let fig. 407 represent a portion of a plan and elevation of a hipped roof, of which it is required to determine the length and inclination of the hip rafter. The pitch is assumed at 45 deg. for sides and end, and the angles *a* and *b* right angles. Take the length *ac* in plan and set it off from *d* to *f* in elevation, from the point *f* draw *fo* perpendicular (the point *o* being the height of the ridge), join *d* to *o*, then *do* is the true length and inclination of the hip, and the bevel at A shows the saw cut for the top end of the hip, in the same manner as B shows the level for the foot. The hip rafter is therefore seen to have a flatter inclination than the common rafters, *fo* being level with them at the ridge and at their feet, this is brought about by the hip having a longer distance to cover.

To take a more complicated example, in fig. 408 let ABCD be the plan of a roof in which it is required to find the length of the rafters, the backing of the hips, and the shoulders of the jack rafters and purlins. Draw GH parallel to the sides AD, BC dividing longitudinally the space to be covered, from the points ABCD with any radius, describe the curves as shown, intersecting the sides of the plan, and from these points with any radius bisect the four angles of the plan in the points *v*, and from ABCD draw the lines of the hip rafters through these points, cutting the ridge line in G and H. The dotted lines *ce* and *df* at right angles to the ridge indicate the plans of the end entire common rafters. From any line MN set off the height of the roof OP and join PM and PN, which show the true length of the rafter. From the points G and at right angles to the plans of the hips, set off the heights GS equal to the height of the ridge of the roof, then AS, BS, CS, DS are the true lengths of the hip rafters.

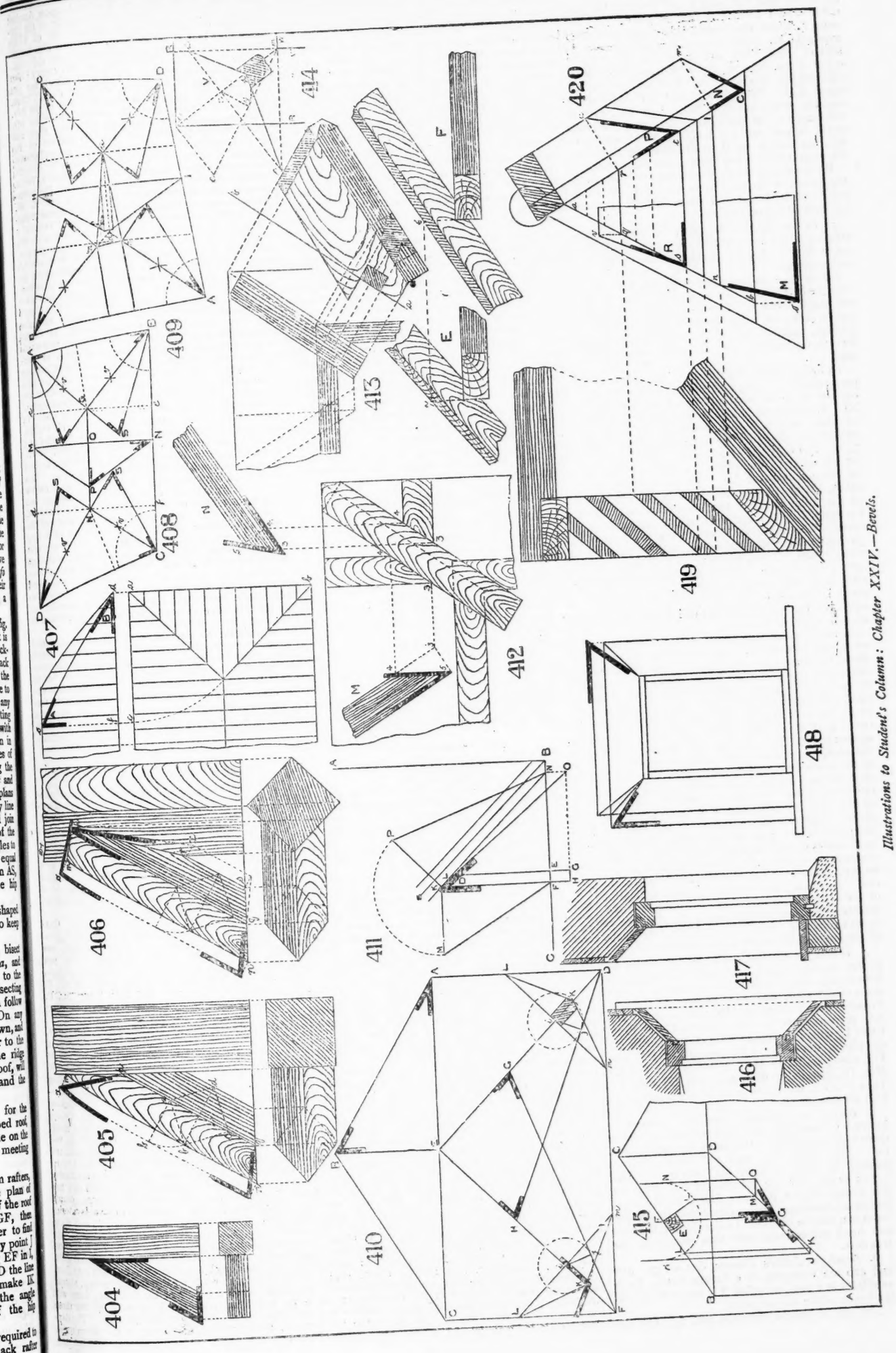
Take another case in which an irregular-shaped space has to be roofed in, and it is desired to keep the ridge level (fig. 409).

Let ABCD be the plan of such a roof, bisect the angles by the lines A*d*, B*d*, C*a*, D*a*, and through *a* draw the lines *am an* parallel to the sides BC and AD, and meeting the lines bisecting these angles in *m* and *n*; the ridge will then follow the line *man*, which will enclose a flat. On any line HI set up the pitch of the roof as shown, and from the points *man* and perpendicular to the plan of the hips, set off the height of the ridge which, being joined to the angles of the roof, will give the true length of the hip rafter, and the bevels at their head and feet.

Another point which it is necessary for the craftsman to find out in setting up a hipped roof is what is known as the *backing* or angle on the back of the hip rafter, formed by the meeting of the two planes of the roof.

In fig. 410 let AB, BC be the common rafters, AC the span of the roof, and DEF the plan of the hip. From E set off the height of the roof EH, EG equal to EB and join HD, GF, then HD, GF are the hip rafters. In order to find the bevel for the back of these, from any point J in ED draw the perpendicular *ji* cutting EF in I, and through I draw perpendicular to ED the line EF cutting DA, DF in L and M; make IK equal to LJ and join KL, KM and the angle EKF is the angle of the back of the hip rafter.

Take another case in which it is required to find the length and bevel of any jack rafter



Illustrations to Student's Column: Chapter XXIV.—Bevels.

(fig. 411). Let ABC be the plan of one angle of a hip roof, BS the plan of the hip rafter, it is required to find the length and bevel of the jack rafter whose horizontal plan is DEF. At the point K where the longest side of the jack rafter meets the hip rafter, draw KM at right angles to side of jack rafter and make the angle KFM equal to the slope of the roof, draw also KP at right angles to side of hip KN and make KP equal KM. Produce KF and LE indefinitely and make KH equal to MF, then LK, GH is the length of the jack rafter. To obtain the bevel at the upper end draw NO at right angles to BC, making it equal to EG and join KO, then the angle OKH is the bevel of the jack rafter.

We have thus shown the principles upon which the bevels of the hip rafters and jack rafters in a hip roof are found, and more difficult problems are worked out on the same lines.

3. *Valley Roofs.*—A valley is the internal meeting of the two inclined sides of a roof. The rafter which supports the valley is called the valley rafter.

Let us take an example. Let fig. 412 represent the half plan of two roofs of different pitches meeting in a valley. Two jack rafters are shown, one to each roof. The larger roof is inclined at 30 deg., and the pitch of the small one is found by making the total rise the same as the large one.

To find the bevel for the short jack rafter, raise perpendiculars from 3 and 4 in the plan until they cut the slope of the roof (placed temporarily at N). After making the width equal to that shown on plan, take a perpendicular across from 4, meeting the opposite edge in 5; join points 3 and 5, and the edge-cut is complete. The edge-cut for the rafter to the wider span is obtained in a similar manner (see M). In constructing this valley, the jack rafters are kept below the edge of the valley to allow for the thickness of the boarding. In the figures E and F this is indicated. The figure at F represents the roof of 30 deg. span with jack rafter, wall plate, and valley board. Then, in order to find the necessary notch in the rafter of the quicker-pitched roof, draw the perpendicular to 6; carry this point by means of the dotted line to 7, which will give the position within which the boarding must be kept, at this point.

In order to find the bevels of the valley rafter we must proceed as follows:—The fig. 413 shows the same valley rafter as last described, the ridges and wall plate being also marked; on the line *ab*, parallel to the valley, is set up the true pitch and length of the valley. The student will notice the notching on the wall plate, and the bevel at the top end, where the valley comes against the ridge. To find the bevels develop the edge, and project each point, as shown both in the lower and upper ends. We have still to show the backing or bevel on the upper side of the valley rafter. Fig. 414 shows the method of finding this. W, R, and V represent the wall plates, ridge and valley rafters of the roof; at any point on the plan of the valley draw *cd* at right angles to *mn*, meeting the line of the wall plates produced in *c* and *d*; from the point *n* draw *na* at right angles to *nm*, and equal to the rise of the roof. By joining *a* to *m* the length and inclination of the valley is shown; from *x* draw *xy* perpendicular to *am*, and set off from *x* the distance *xp* equal to *xy*, join *cp* and *dp*, and the true shape of the angle of the valley rafter is obtained.

4. *Bevels for Purlins.*—To find the bevels for purlins passing round a hipped roof proceed as follows (fig. 415):—Let E be the purlin, BC the slope of the roof, and AD the plan of the hip. From F describe any arc HN, and draw HJ and NO perpendicular to the diameter HN. From I and L, where the upper sides of the purlin cut the circle, draw IK, LM, parallel to HJ, and FG, also parallel to HJ. From M and K draw MO, JK, parallel to BD, and join GJ and GO. Then FGO is the down level of the purlin, and FGJ its side bevel.

5. *Bevels for Splayed Window Linings.*—Linings to windows are often splayed to admit more light, not only at the sides, but also at the top. Figs. 416, 417, and 418 show such a window in plan, section, and elevation. The bevels or cuts for the junction of the upper or side linings shown in black lines, hardly want further explanation. It is evident that the proper bevel can only be obtained by developing the side and head respectively, and thus obtaining the true cuts.

6. *Bevels for Louvre Frames, &c.*—Figs. 419 and 420 are examples of a louvre frame, for a ventilator in a roof, of which it is required to find the bevels of the various parts.

Fig. 420 shows the elevation and fig. 419 the section of the ventilator. In the elevation *abc* represents the inside of the sloping frame. In order to determine the true shape of the sides they should be developed as shown (*i.e.*, the real width drawn) and from the point I, where the side meets the back of the sill, draw a perpendicular meeting the inside at the point *m*; then by joining *c* to *m* we shall obtain the bevel N, which will enable the sides to fit properly on to the top of the sill. Again, the sides being grooved into the sill it is necessary to find the bevel from this groove; for this purpose develop the top side of sill, as shown; from the point *b* draw a perpendicular to meet the developed edge, join *no*, and the bevel *n* for the groove is obtained. Next, as to the louvre-boards themselves, we must determine the bevel for the groove in the sides into which these are fixed, and also the bevel to which they are cut. As to the former, the louvre *qrst* is shown in elevation, and from the point *r*, where the louvre cuts the back edge (see section), draw a perpendicular meeting the edge of the side developed in *u*, join *u* to *t*, and the bevel for the groove is obtained, marked P.

To find the side-cut of the louvre, develop, as always, the top face of the board, and from the point *q*, where the top edge cuts the side of the frame, draw a perpendicular meeting the developed edge in *v*; then, by joining *s* to this point, the bevel R is obtained for this louvre-board. The others follow in a similar manner.

We have now glanced at a few of the principal bevels or cuts used in carpentry and joinery, and if, as we hope, the principles of forming these have been grasped, they will be easily applied to any case which will engage the craftsman's attention.

Illustrations to Student's Column.

CHAPTER XXIV.—BEVELS.

404. Simplest form of bevel.
405. Bevel betweew strut and post.
406. Bevel between strut and post, standing at angle of 45 deg.
407. Plan and elevation of hipped roof.
408. Plan of roof.
409. Plan of roof.
410. Method of finding "backing" of hip rafter.
411. Method of finding length and bevel of jack rafter.
412. Half plans of two roofs of different pitches.
413. Plans of two roofs of different pitches.
414. Method of finding "backing" on upper side of valley rafter.
415. Method of finding bevels for purlins in hipped roof.
416. Plan of splayed window.
417. Section of splayed window.
418. Elevation of splayed window.
419. Section of louvre framed to ventilate a roof.
420. Elevation of louvre framed to ventilate a roof.

OBITUARY.

DR. J. H. MIDDLETON.—The artistic as well as the antiquarian world has suffered a grievous loss in the death of this well-known man, who, at the early age of forty-nine, passed away on the evening of the 10th inst., at "The Residences," South Kensington Museum, at which establishment he was Director of the Department of Art. To the most untiring energy he added the most acute observation; there was hardly any field of art which was not included in his range of knowledge. To acquire this knowledge he was in the habit of entering the workshop, and thus with his own hand gaining a practical experience in the mysteries of craftsmanship and the application of material. Born in the north of England, he spent his childhood in Italy. On returning to England his father, who practised as an architect, settled at Cheltenham, and to the college at that place the young Middleton went, afterwards entering Exeter College, Oxford. He then entered his father's office, and afterwards passed into that of the late Sir Geo. Gilbert Scott, R.A., also increasing his knowledge by travelling in many places. Those who were best able to judge soon recognised the extraordinarily wide extent of his cultivation, which recommended him to the editors of the "Encyclopædia Britannica," to which he contributed not less than eighty articles. Many of these were of great value, more particularly those upon plate, metal work, textiles, schools of painting, sculpture, and the topography and archæology of Rome. Indeed, it was in collecting his materials for this article that he laid the foundation for his well-known book, "Ancient Rome," the first edition of which was published in 1888. In 1886 Mr. Middleton was elected Slade Professor at Cambridge, and soon after Director of the Fitzwilliam Museum. He was made Hon. M.A. Camb., 1886, and M.A. Oxon, 1887, and was elected a Fellow and afterwards Hon. Fellow of King's College. In 1892 he was made Litt. Doc. Cambridge, and D.C.L. Oxon, 1894. His extraordinary range of knowledge recommended him for the post of Director of the Department of Art, South Kensington Museum, which position he has held but for three years. Dr. Middleton had already collected materials for a book upon Athens upon the same lines as his book upon Ancient Rome. He was a constant contributor to the proceedings of the Society of Antiquaries, of which body he was a vice-President. He has also contributed some important articles to our own columns.

MR. H. CRISP.—The death of Mr. Henry Crisp (of the firm of Messrs. Crisp & Oatley) has just taken place at his residence, 26, West Park, Clifton. The deceased gentleman was the son of the Rev. Thomas S. Crisp. He was articled to the late Mr. Thomas Foster, architect, in the year 1845, and commencing practice on the expiration of his articles, was very soon successful in several competitions. Pilning Church was built from his designs, and Stonehouse Church and St. Cuthbert's, Wells, underwent alterations under his care. He subsequently entered into partnership with Mr. E. W. Godwin, and together they carried out many important works, amongst others Glenbeigh Towers, a residence in Ireland. In the competition for the Guildhall, Bristol, the firm submitted three designs, and were awarded all three premiums, first, second, and third; neither plan, however, represented the Guildhall as erected, for after a great deal of controversy over the subject, the work passed into other hands. Amongst local matters in which Mr. Crisp's firm was concerned were the considerable extension and new administration department at Bristol Lunatic Asylum, the nurses' home, and new wards at the General Hospital, police stations at Bedminster and Redland, and show-rooms and factories of the Bristol Wagon Works. Many big business premises and vicarages have been erected from the deceased gentleman's designs, and the restoration of Dundry Church tower, was entrusted to him. In 1888 he took into partnership Mr. G. H. Oatley, who had been associated with him since 1879, and in 1894, the firm, in conjunction with Mr. W. S. Skinner, won the competition for a lunatic asylum for 2,000 patients at Winwick, in Lancashire. This work is still in progress. Mr. Crisp was a Fellow of the Royal Institute of British Architects, and was at one time on the Council of the Institute. Until a month or two ago he was President of the Bristol Society of Architects, but owing to failing health he resigned that position. His strength gradually weakened, and on the 8th inst., at the age of 70, he passed away. Personally he was a man of kindly disposition, who won much respect, and professionally was known not only for his architectural work, but for the accuracy of his estimates as to the probable cost of enterprises upon which he was called to give an opinion.

MR. R. W. THOMPSON.—The death has occurred at his residence at Bishop Auckland of Mr. Robert Wilkinson Thompson, architect, who was a member of an old Auckland family, his father having been an architect before him. The deceased, who has been in failing health for a considerable time past, was architect for many of the more important buildings in Bishop Auckland, including the Edgar Memorial Hall, and the Lightfoot Church Institute.

GENERAL BUILDING NEWS.

HUDDERSFIELD SANATORIUM.—The foundation-stone of a Sanatorium or Infectious Diseases Hospital, which is in course of erection at Mill-hill, Dalton, Huddersfield, for the Huddersfield Corporation, was laid on the 10th inst. by Alderman W. H. Jessop. The Sanatorium will provide accommodation for ninety beds. The architects, whose plans were accepted in competition, are Messrs. Edward Thomas & Sons, Westminster, S.W. The cost of the buildings will be about 26,000*l.*, in addition to which 3,321*l.* has been paid for the site.

METHODIST CHAPEL, PENRHIWCEIBER, GLAMORGANSHIRE.—Hermon, the new Welsh Calvanistic Methodist Chapel at Penrhiwceiber, was opened recently for public worship. The new building provides accommodation for 800 persons. The contract was placed in the hands of Mr. T. Rees, Merthyr Vale, the architect being Mr. D. Roderick, Aberdare. The total cost is about 4,000*l.*

HOME FOR CRIPPLED CHILDREN, GOSFORTH, NORTHUMBERLAND.—The foundation-stone of a new Home for Destitute Crippled Children, to be built at Salter's-road, Gosforth, has just been laid by Mrs. J. W. Sanderson. The new Home is being erected on a site of two acres in Salter's-road, Gosforth, from the designs of Mr. Edward Shewbrooks, architect, of Newcastle, whose plans were selected from those submitted in competition by local architects. The new buildings, when completed, will provide accommodation for 73 boys and 37 girls, and the necessary staff of officials, nurses, and servants, and will comprise day-rooms, reading and committee rooms, master's and matron's sitting rooms and bed rooms, large school room and class room, dining hall, kitchen, and other domestic offices, lavatories and cloak rooms, tailors', basket-makers', and shoemakers' shops, laundry, wash house, &c. The dormitories and bath-rooms will be on the first floor, approached by separate staircases for boys and girls, and these stairways, together with the main corridors, will be fireproof; while for use in emergency, should fire break out in any part of the building, there will be an additional staircase from each of the three large dormitories, leading to the open air. The day-rooms, sitting-rooms, and most of the dormitories will face the south. The workshops, kitchen, and

laundry blocks, comprising the north front, will face towards Salter's-road. The playgrounds will extend along the south front, and space will be reserved at the east end of the site for the erection thereon of a detached hospital block, when funds shall permit. The elevation will be faced with red Choppington bricks, and relieved with Kenton stone dressings. The contractor is Mr. S. B. Burton, Newcastle.

BUSINESS PREMISES, WORCESTER. — New business premises have been erected for Mr. J. Barnett, corn and coal merchant, at the corner of New-street and Charles-street, Worcester, on part of the site acquired by the Corporation a year or two since for the purpose of improving the communication between the Blockhouse district and the centre of the city. The new building is of brick and stone, the front being faced with Dennis's Ruabon bricks. The basement is built with hollow walls, and the floors laid with granolithic. Adjoining the shop is the store-room. The premises have been fitted for the electric light by Mr. Santonna; gas also being laid on. The architects were Messrs. Yeates & Jones, and the builders Messrs. J. Wood & Sons.

MISSION CHAPEL AND SCHOOLS, THORNHILL BRIGGS, YORKSHIRE.—The memorial-stones have just been laid of a mission chapel and school at Thornhill Briggs, for the friends of Bethel New Connexion Chapel. The sum of 440*l.* was spent in the purchase of the site, and the designs of Mr. E. C. Brooke, architect, Brighouse, were adopted. The school-chapel, 36 ft. by 30 ft., will have an external porch at the entrance and two class-rooms in the rear, each 15 ft. square. The chapel will be situate near the bottom of Smithy Carr-lane, at the junction of James-street, and will provide seating accommodation for 250 people. The contractors are:—Mason, Mr. John Hardy, Hove Edge; joiner, Mr. T. E. Hirst, Brighouse; plumber, Mr. C. Candelatt, Brighouse; plasterer, Mr. J. Barraclough, Brighouse; slater, Mr. J. Smithies, Bradford; painter, Mr. N. Morrell; and heating apparatus, Messrs. Beckwith Bros.

BATHS, SNEINTON, NOTTINGHAM. — The new Victoria Baths at Sneinton have just been completed. The larger of the two swimming-baths, which will be known as the exhibition swimming-bath, is 110 ft. long and 35 ft. wide. The accommodation for visitors to the baths on the occasion of swimming entertainments has been considerably increased, the balcony which runs round the whole of the bath having a holding capacity of 600. Below this balcony there are sixty-six dressing-boxes, and for the convenience of competitors at sports there are two large dressing-rooms. A Blackman ventilating fan has been provided, driven by electricity, obtained, like the light which illuminates the whole of the building, from the Corporation electric lighting station. The small swimming bath is 70 ft. by 30 ft., and, like the larger bath, it is lined with white glazed bricks. There are twenty washing baths for gentlemen, divided into first and second class, and ten for ladies, four of these being first-class, and the remainder second-class, suitable waiting-rooms being provided for each class. Electric bells have been fitted to each bath. The Borough Engineer is Mr. Arthur Browne.

WESLEYAN CHAPEL, FELIXSTOWE.—A new Wesleyan chapel has just been opened at Felixstowe. The new building is situated at the corner of the Victoria Parade and Orwell-road. Externally it is built of Kentish Rag, laid in random work, with Bath stone dressings. The lower part of the tower, which will rise with a spire to the height of 100 ft. when the plan is completed, forms a porch entrance from the Orwell-road, and there is another entrance facing the Parade. So far as the work has at present gone, the dimensions of the interior are:—length 70 ft., width 38 ft., height on the aisle walls 14 ft., height to the apex of the ceiling 30 ft. The aisles are divided from the nave by ornamental iron columns, which support the roof timbers; the ceiling of the nave is waggon-headed; and dormer gables have been formed on each side of the roof. A platform of pitch pine, filled in with ornamental ironwork, is raised at the chancel end of the transept. The walls are finished in rough stucco, and the benches are of stained deal with pitch-pine standards. In time to come, the wall at the back of the platform will be taken out, and a chancel and organ chamber added, with schools and class-rooms on ground in the rear. The architects are Messrs. W. Eade & Johns, Ipswich, and the work has been carried out by Mr. T. Ward, of Felixstowe; the hot-water apparatus for heating the church was put in by Mr. Warner, of Ipswich, and the gas fittings were supplied by Messrs. Brown, of Birmingham. Incandescent burners are used for lighting.

PROPOSED ENLARGEMENT OF EDINBURGH CITY CHAMBERS.—At a meeting of Edinburgh Town Council on the 9th inst. there were submitted for approval the report and plans for the improvement and enlargement of the City Chambers. Dean of Guild Miller, in moving the adoption of the report and plans, said the intention was that the central portion should be tackled immediately, leaving the rest to be built during the 20th century. It was agreed to again consider the report in a fortnight.

MANTLE MEMORIAL SCHOOLS, LEICESTER.—The foundation stones were laid recently of the proposed Mantle Memorial Schools on the Belgrave-road. The schools are to be erected, in conjunction with the intended new large hall, to hold about 1,200 people in connexion with the Wesleyan Forward movement. The schools, of which the architect is Mr. Arthur Wakerley, will be situate at the rear of the large hall, and will face Rothley-street. They will comprise a central hall, with galleries round, on which upwards of twenty class-rooms open, the whole providing accommodation for about 1,000 children. The building will be of red brick, with terra-cotta dresssings, and the front will be broken into three gables, those at each side containing the respective entrances for boys and girls. The cost will be 3,500*l.*

NEW PRIORY CHURCH, RUGELEY.—On the 12th inst. the ceremony of blessing and laying the first stone of the new Catholic Priory Church at Hawkes-yard, near Rugeley, took place. The building will consist of a large nave without aisles—a collegiate chapel in plan. The internal dimensions will be:—Length, 120 ft.; width, 30 ft.; height, to the springing of roof, 40 ft. The church will be divided into nine bays, each of which, with two exceptions, to be occupied by lofty three-light traceried windows, while at the west end will be a large seven-light traceried window. The building will be divided into three portions, the space set apart for the congregation, another for the choir stalls, and another for the sanctuary. In the last bay but one, on either side of the west end, will be richly screened openings into two chantry chapels, each containing an altar, two other altars being on either side of the choir. The roof will be hammer-beam. Penkridge stone is the material proposed to be used. The church will form part of a large scheme, and will eventually form one of the four sides of a quadrangle and cloister. The architect is Mr. E. Goldie, of Kensington, London.

SCHOOL, TWO-MILE-HILL, BRISTOL. — An elementary school has been erected at Two-Mile-Hill, near St. Michael's Church. The plans were prepared by Mr. John Mackay, of Kingswood, and the building has been erected, by Mr. Wiltshire, of stone with freestone dressings. The school is arranged on the class-room system, and there are two central halls, one for boys and another for girls. These, being one above the other, are identical in size—66 ft. by 31 ft. The class-rooms are built to accommodate sixty children each, and are 22 ft. in height. The accommodation is for 970 children, made up of 300 boys, 300 girls, and 370 infants. The site cost 935*l.*, and the building and caretaker's house will cost about 10,500*l.*

ALTERATIONS TO BATHS, NOTTINGHAM.—After having been closed for some four or five months for alterations and renovation, the Radford Swimming Bath has just been opened to the public. The old dressing-boxes have been removed, and new ones, lined with glazed tiles, and having concrete floors, substituted, whilst the accommodation has been increased by the erection of a tier of additional boxes on the gallery at each end of the bath. The bath itself has been lined with glazed bricks on the bottom. The supply of water has been increased, and to insure speedy heating a new boiler, 26 ft. by 7 ft., laid down. The interior of the building has been painted, and other improvements effected. The work has been carried out under the direction of Mr. A. Browne, Borough Engineer, at a cost of about 1,000*l.*

CHURCH INSTITUTE, STOKE, GUILDFORD.—A new Church Institute has just been opened at Stoke. The structure, which has been erected from plans by Mr. J. Lake, architect, of Guildford, is 96 ft. in length, and the width is 30 ft. wide. The principal hall, which will be used for public meetings, concerts, and the like, is 60 ft. long by about 30 ft. wide. The piers are of oak throughout, and a raised platform, 20 ft. by 8 ft., is of deal. Adjoining the large hall is a smaller one, 24 ft. by 18 ft. There are also a reading-room 24 ft. by 16 ft., a cloak-room, lavatory accommodation, and a kitchen containing three boilers. The entrances to the building are three in number, two to the large hall, and one to the reading-room. Messrs. Higlett & Hammond were the builders.

POST-OFFICE, KIRRIEMUIR, N.B.—A new post-office has been erected at Kirriemuir from plans prepared by Mr. D. Waterston, architect, Estate Office, Glamis. The contractors are all Kirriemuir tradesmen, viz:—Masons, Messrs. Crabb & Ballantine; joiner, Mr. Charles Ogilvy; plasterer, Mr. George Munro; plumber, Mrs. Adams.

BAPTIST CHAPEL, STAFFORD.—New Baptist chapel and schools have just been opened on The Green at Stafford. The buildings have been built with brick and stone dressings. A spire has been added. The church will seat on the ground floor 310, and a gallery which is placed over the main entrance will seat 115, making a total accommodation of 425. There are also ministers' and deacons' vestries, with lavatory accommodation, and an organ-chamber. A church parlour will seat 110. The schools are at the rear of the church, and are arranged on the class-room principle, and harmonise in style with the church. Accommodation is provided for 250 scholars, and separate entrances and lavatories are provided for boys and girls. The heating of the whole buildings is carried out on the low-pressure hot-water system. Inside the church the joinery is of deal and pitch pine. The buildings are lighted by electricity supplied by the Corporation, and the fittings have been put in by Messrs. Rooper & Co., Stafford. The total expenditure on the buildings is 5,700*l.* The architect was Mr. E. Harper, of Birmingham. The builder is Mr. G. H. Marshall, Smethwick.

SANITARY AND ENGINEERING NEWS.

PROPOSED RESERVOIR, COLNE, LANCASHIRE.—At a recent meeting of the Colne Town Council, the Water Committee stated that in consequence of the rapidly increasing population the present water supply was altogether inadequate. They had therefore secured the services of Mr. Hill, C.E., of Manchester, as engineer in seeking for an ampler supply, and this had now been obtained in the Wycollar Valley, three miles from Colne. A reservoir would require constructing, which would cost 50,000*l.*

CRAIGMADDIE RESERVOIR, GLASGOW WATER-WORKS.—On the 11th inst. the new Craigmaddie Reservoir was opened. The reservoir forms part of the scheme for duplicating the Loch Katrine water-works so as to afford a supply of 100 million gallons per day to the city. It has taken ten years to complete. The cost of the reservoir, including land, has been about 300,000*l.* The reservoir has lying underneath it a great shale bed dipping from west to east from a depth of 30 ft. to 210 ft. It was found necessary to cut through the sandstone overlying the shale bed and insert a puddle wall, which is continuous along the whole embankment, which is nearly one mile in length. The western side of the new reservoir is formed of the embankment, which divides it from the old one. A natural embankment is formed round the eastern side of Barrachan estate. The artificial embankment constructed runs along the south and east sides, and the deepest part of the puddle trench was near Bankell Farm, and was 210 ft. From this point a step is made rising about 130 ft. This was decided upon on account of the ground outside rising from the general level of the reservoir and the water inside being much less in depth. At intervals all along the trench concrete pillars have been erected, which serve the double purpose of preventing any collapse and of allowing the work of inserting puddle to be gone on with. The embankment is formed with a slope of three to one on the inside and two to one on the outside, and finishes with a width of 18ft. at the top. The greatest width of the base is 500ft. On each side of the puddle wall a selected lining is formed equal in width to the puddle wall. On the inside the face of the embankment is beached with stones broken so as to pack closely together, and having a depth of two feet. This beaching rises within 20 feet of the top water line, and above this embankment is pitched with hammer-dressed stones 12 inches deep, laid on a bottom of broken stones, also 12 inches in depth. The surface of the outer slope will be soiled over and sown down in grass. From the basin at the outlet of Mugdock Tunnel there is an aqueduct under ground entirely lined with concrete, and fully 1,000 yards in length, which discharges the water into a gauge basin 65 feet in diameter. In this basin the water is steadied by division walls, which are all built of ashlar. From this basin the water flows over gauges and steps into the measuring pond, which is triangular in shape, and can contain 8½ million gallons. An embankment has been made between this pond and the main reservoir, under which are carried three 48-inch pipes. Over these pipes there is erected a tower from which the flow can be regulated. At the outlet of the large reservoir, near what is known as "The Commissioners' Cottage," a discharge tower has been built, from which a bridge leads to the embankment. In this tower there are a series of valves to allow the water to pass through the embankment into a straining well similar to the one now in use. From this straining well southward a tunnel has been constructed into which two large pipes are laid conveying the water to the valve chamber, from which two 36-inch mains branch from each pipe leading to the city. The new reservoir will be close on 90 acres in extent as compared with 60 acres in the Mugdock one, and water can be drawn from the new one to a depth of 50 ft., but the reservoir will at one place be 90 ft. deep. From this lower part a discharge culvert has been carried through the main embankment at a cost of 4,000*l.*, in which a 2-ft. pipe has been laid and continued until it reaches the river Allander, near Dougalston South Lodge. This pipe can empty the reservoir at any time. The engineer has been Mr. James M. Gale, M.Inst.C.E. Messrs. Morrison & Mason were the contractors.

STALYBRIDGE AND DUKINFIELD SEWAGE SCHEME. — Mr. G. W. Willocks, M.Inst.C.E., Local Government Board Inspector, held an inquiry at the Technical Institute, Dukinfield, recently, into an application by the Stalybridge and Dukinfield Joint Sewage Board for sanction to borrow 58,400*l.* for purposes of sewage and sewage disposal.

FOREIGN.

FRANCE.—Up to the present time the only means of seeing the sewers of Paris has been by little wagons drawn by hand, but they are now to be replaced by mechanical traction, by means of boats fitted with benches for visitors, which boats are

to be drawn by another boat driven by electricity.——A fine crêche presented to the city of Paris by Madame Furtado-Heine has just been opened. The Government have presented her the Cross of the Legion of Honour. The cost of this crêche has been 600,000 francs, and it has been designed by M. Blondel, architect of the Louvre. It is fitted with every comfort, and with all the latest hygienic improvements.——The Paris-Lyons-Méditerranean Company are enlarging the Paris station, which is to enclose ten new lines, to be ready for the 1900 Exhibition.——The Ville de Paris has just opened a competition for the erection of two children's hospitals, one in the Rue Michel Bizot, in the 12th Arrondissement, and the other in the Rue Etex in the 18th Arrondissement.——The administration of Beaux Arts has just placed in the Sorbonne the large decorative painting by Albert Besnard, which he painted for this building. The subject is "La symbole de la vie et de la mort."——The Salle du jeu de Paume at Versailles is to be reopened to the public. It has been closed about two years for repairs. The public can now go into the galleries of the Empire as well; they have been completely restored.——The jury on the open competition for erecting a monument to Carnot at Lyons has not awarded a first prize. The first of the second prizes has been given to MM. Naudin, architect, and Gauquié, sculptor; the second to MM. Huguet & Delorme, architects, and Lamothe, sculptor.——The rebuilding of the Hôtel de la Préfecture at Nancy is shortly to be begun. It was burnt last January.——M. Albert Ballu, who is superintending the excavations at Timegad, has just telegraphed to the Minister of Fine Arts that a fine mosaic has been discovered, also some baths, and numbers of medals and statues of great interest.——The Société Centrale des Architects has awarded to M. Janty, architect, the large silver medal for Domestic Architecture.——The sudden death of M. Charles Edouard de Chaussé is announced, at the the age of 58. He was a member of the Société Centrale des Architects, and was a pupil of MM. Garnaud and Metz. He was for some time Sub-Inspector of the Service d'Architecture de la Ville de Paris, and was the architect of several good buildings. He was also on the Tribunal of Commerce of the Seine.

GERMANY.—Numbers 4 to 6 of the present volume of the "Zeitschrift für Bauwesen" contain some excellent photogravure views illustrating subjects under consideration for this official publication. Among these we would notice the view of the large council chamber in the Home Office at Berlin, which has been lately redecorated and fitted at a cost of 2,500*l.* under the direction of "Bauinspektor" Huckels. The room measures 16 by 8 mètres, and shows some excellent joinery. Unfortunately, however, much of the detail is exceedingly coarse in design.——Among the many gatherings which are being held at Berlin on the occasion of the Exhibition of the German Arts and Crafts Congress, which was held from the 5th to the 8th inst., takes an important position. The full reports of the proceedings and lectures will be before us in due course, and we will at present only remark that twenty-three of the leading Arts and Crafts Societies of Germany were represented at the gathering, which was opened by Herr Hofacker, the architect. One of the principal lectures was by Professor Lessing, on the position of arts and crafts in public life. The Government was officially represented.——At Dresden, on the 7th inst., the new garrison church at Hanover was inaugurated with much ceremony. It has seating accommodation for 1,600 persons, and is said to be successfully planned and of good acoustic properties. The architect is Professor Hehl, of Charlottenburg.——Last week a new museum was opened at Stuttgart to hold the national industrial collections. The King of Wurtembourg attended the ceremony, and numerous distinctions were accorded to the architect and the arts and craftsmen associated with him in the construction of the building.——The reconstruction of the large through station at Erfurt is the subject of a long article in the "Zeitschrift für Bauwesen." The works, which have been spread over a number of years, bear high testimony to the Works Department of the Imperial Railways, which has been from year to year improving the railway stations throughout the country. The total expenditure was 6,200,000 marks, or 310,000*l.*

RUSSIA.—A number of large country seats, designed by German architects, are being erected in the Baltic provinces of Russia, and among these one of the most important is a recently-completed mansion for Herr von Wulf, near Stockmannshof, on the Riga railway. Messrs. Griesebach and Dinklage, of Berlin, are responsible for the design and execution, and they have been exceedingly fortunate as regards the site and sufficiency of funds. The mansion consists of a main block with two wings, these latter enclosing a large courtyard. The extensive stables are a feature of the property.

SWITZERLAND.—Particulars have reached us of a very enterprising company which is building a number of new hotels in the Tyrol and modernising some of the old establishments. The intention of the promoters is to cater for the general tourist, and to give special facilities for accommodation at a small price by working on a large scale. There is no doubt that the company have been very successful in the selection of their sites, and the drawings of the new Trafoi and Karersee Hotels in the Dolomites promise well for the future of the enterprise. The Sulden Hotel, on the Ortles, which was erected in 1893, has been bought by the same company.

PHILADELPHIA.—Work on the new county prison at Philadelphia, Pa., of which Messrs. Wilson Brothers & Co. are the architects, is about finished. The 17 acres of ground are surrounded by a stone wall 35 ft. high. The walls are covered by a roof sloping inward, and overhanging the wall 3½ ft. The Administration building is in a recess outside the walls. The prison building inside the walls has a central building from which the cell wards radiate. Each cell is 8 ft. wide, 18 ft. long, and from 8 to 12½ ft. high. The prison will be lighted by electricity and heated by exhaust steam. A laundry, bakery, and hospital are among the accessories of the prison. —*Engineering Record.*

MISCELLANEOUS.

THE GRANVILLE STATUE AT THE HOUSE OF COMMONS.—The Earl of Kimberley has just unveiled the statue of the late Earl Granville in the Public Lobby of the House of Commons. As represented by Mr. Hamo Thornycroft, the sculptor, Lord Granville wears evening dress, and is adorned with the ribbon of the Order of the Garter. His peer's robes depend negligently from the table, upon which rests his lordship's left hand; his right hand grasps a roll of manuscript.

TRAMWAY EXTENSION, ABERDEEN.—Messrs. McAdam & Co., Aberdeen, are to execute the work of extending the tramway track 1,000 yds. in Queen's-road. Their price is 2,000*l.*, but the tramways company supply rails and chilled blocks. The total cost will thus be about 3,000*l.* The line in Albyn-place will be doubled in the autumn.

PROPERTIES FOR SALE.—Having become vacant through the Comte de Paris' death, Stowe House, Buckingham, is offered for sale. It belonged to the Duke of Buckingham and Chandos, who died in 1889, and is one of the finest seats in England. The property, once owned by Odo, Bishop of Bayeux, belonged for a long period to Oseney Abbey, and having been bestowed by Edward VI. upon Christ Church College, Oxford, was purchased by Peter Temple (1560), who erected the original house, rebuilt by his descendant Sir Richard. The fourth baronet, the celebrated soldier, afterwards Lord Cobham, was succeeded, under a special remainder, by his sister Hester, who brought Stowe in marriage to Richard Grenville, of Wotton, near Aylesbury; their descendant being Richard, the late Duke. To Lord Cobham, *obiit* 1749, Stowe owes most of its beauty. He added wings and corridors to the house, and employed Bridgeman to lay out the gardens, covering nearly 400 acres. The gardens were next remodelled in a more natural fashion by Kent, who designed some of the buildings in the gardens, namely, the Temples of Venus (on the bastion), of British Worthies, of Concord and Victory, after the Maison Carrée at Nismes (internal decoration by Borra, the King of Sardinia's architect, 1763), and of Ancient Virtue, containing the four statues by Scheemaker, with Lord Lyttleton's inscriptions. To Kent, too, are due the two Ionic pavilions near the Corinthian Arch (since altered by Borra); the Queen Charlotte's Buildings (portico added, 1789), the Hermitage, Congreve's monument, two gateways into the courts, north front, and the principal entrance gate, south front (altered by Valdré); he also painted the hall ceiling. In the oval Saloon are sixteen scagliola Doric columns by Bartoli, the alto-relievo by Valdré, nearly all the 300 figures being after examples at Rome. Valdré enlarged the pediment, and added the four lions, of Gibbs's monument to Lord Cobham; the Temple of Bacchus and the Boycot Pavilions were by Vanbrugh. Many improvements were made by the second Earl Temple, *obiit.* 1779; and, in the interior, by the first Marquess of Buckingham, *obiit.* 1813. The main front, facing nearly south-west, has a total length of 916 ft. A flight of 31 steps leads up to a portico, with six Corinthian columns. The design has been attributed to Wyatt, but it seems that it was the work of Lord Cobham and Lord Camelford, the latter of whom designed the arch on the hill-brow, facing the main front. Launcelot Brown began his career at Stowe; he became head-gardener there, though he was given very little share in re-laying out the gardens. Brown left in 1750, and was made head-gardener at Windsor and Hampton Court. Gibbons did most of the carving in the chapel. The MSS. room was modelled after Henry VII.'s Chapel. The house stands on an eminence which rises from the bank of a large lake to the south.—The manors of Nunney Castle and Nunney Maudley, near Frome, including the ruins of the castle, one of the few strongholds of its kind in the county. It stands on the north side of Nunney village street, and is surrounded by a big moat. It was built by Sir John de la Mere at the end of the thirteenth century; oblong on plan, with a round tower at each angle. The de la Meres were lords of the manor until the reign of Henry V., when it passed to William Paulet, who married Eleanor, sister and heir of Sir Elias de la Mere. Their grandson was the celebrated Marquess of Winchester, Queen Elizabeth's Lord Treasurer, and builder of Basing, who died in 1572, having parted with this estate. During the Civil War it belonged to the Prater family, and was garrisoned for the King. It was captured by the Parliamentary forces and burnt. The ruins were enclosed in 1889.—St. George's Hall, Langham-place (with the Minor Hall in Mortimer-street, occupied by the London Academy of Music), for many years the scene of the popular entertainments given by the late Mr. and Mrs. German Reed, Arthur Cecil (Blunt), Corney Grain, and others.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Winstone & Co., 19, Cross-street, Finsbury-pavement, have registered their business under the Companies Act as a Limited Liability Company.——Messrs. F. Ames & Co., art metal workers and electrical engineers, 1 and 2, Goldney-place, Harrow-road, London, have taken into partnership Mr. Walter C. Garrard, late on the staff of M. Immisch & Co., Woodhouse & Rawson United, Thames Electric Launch Company, &c. The style of the firm will be Ames, Garrard, & Co., and the offices and works will be situated at Goldney-place.

PROPOSED BY-LAWS AS TO DRAINS UNDER METROPOLIS MANAGEMENT ACT, 1855.—By Section 202 of the Metropolis Local Management Act, 1855, the London County Council is empowered to make by-laws for regulating "the dimensions, form, and mode of construction, and the keeping, cleansing, and repairing of the pipes, drains, and other means of communicating with sewers, and the traps and apparatus in connexion therewith." As it appeared to the Public Health and Housing Committee of the Council that it would tend to the more uniform administration of the law relating to drainage in the several sanitary districts of London if by-laws were made under this section, a draft was prepared, which was submitted to the Local Government Board for their preliminary approval so long ago as July, 1893. In January, 1894, a letter was received from the Local Government Board, stating that there were some points in the draft by-laws on which they would be glad to receive explanations, and suggesting that the most convenient course would be for the medical officer and superintending architect of the Council to attend at the Board's office and confer with the officers of the Board on the subject. This proposal was adopted, and a conference was accordingly held on March 6, 1894, when certain amendments of the draft were provisionally agreed to, the officers of the Council undertaking, after these amendments had been approved by the Committee, to forward to the Local Government Board a copy containing all the amendments agreed upon. An amended copy was forwarded to the Board on August 2, 1894, and, notwithstanding repeated applications, this copy was not returned to the Council, with the Board's observations upon it, until October, 1895. The alterations suggested by the Local Government Board were at once considered by the Committee, and as they raised some very important legal questions affecting the administration of the by-laws the Committee found it necessary to instruct the solicitor to enter into communication with the Board on the subject. The solicitor accordingly addressed a letter to the Board on January 28 last. No answer has yet been received, though on two occasions the Board have been pressed for a reply.

AN OIL-COLOUR INDICATOR.—Mr. F. Oughton, of Wargrave, has published under this title a colour-chart showing, in concentric circles, the colours produced by the mixture of various pure colours, the names of which are printed over each square of colour on the chart, with the name of the resulting colour shown on the diagram. Thus, one square is labelled "Lilac," and below this are the names of the three colours or pigments by the mixture of which it is produced—"Rose Madder, French Blue, and White"; and so on throughout. It can hardly be of much use to artists, who must be incompetent to pursue the art of painting if they cannot find out this for themselves; but it may be very useful for those who have to mix pigments for more practical purposes; and the idea is certainly ingeniously carried out.

GOVERNMENT WAGES.—The Select Committee of the House of Commons on Government Contracts (Fair Wages) Resolution sat on Tuesday and took evidence. Sir M. White Ridley is chairman of the Committee. Mr. Taylor, of the Board of Works, was examined as to contracts and building and other work in the control of the Department. He said there may have been some few complaints as to the working of the regulations. Practically, they adopted the rates agreed between the Master Builders' Association and the workmen. In the contracts for repairs and sundries, where no price was inserted, the regulations met the necessities of the case. He believed the regulations had given general satisfaction, and there was no necessity for any change either in the form of the tender or of the contract. They insisted on the rates being those current in the district where the work was being carried out. Outside London and in the large provincial towns they took the scale of wages published by the National Association of Master Builders for the trade. They put into the hands of every workman a card giving his trade and the rate of wages he was to receive. In some cases they recognised sub-contracting. They took tenders and contracts from all parts of the country, and invariably sent one of their forms to

each party tendering, say from Manchester or London, stating that the rate of wages to be paid should be those current in the district where the work was to be done; but in accepting the tender they did not take into consideration the current rate of wages. The cost of carrying out the resolution of the House of Commons might be taken at from 20 to 25 per cent. There had been but few complaints of the working of the resolution of the House of Commons. He thought that not only had the resolution raised the price of Government works, but throughout the country in general in reference to private work because of the example set.—The Committee adjourned until Friday (yesterday).

THE GREAT BELL AT MONTMARTRE CHURCH.—The great bell called "La Savoyarde," hung in the church on the hill of Montmartre at Paris, was put in movement for the first time the other day, under the direction of M. Rauline, the architect in charge. The axle on which the bell swings is furnished with eight iron pedals on which sixteen men take up their position: the system is completed by two gearing-wheels. The first sounding of the bell dispelled an illusion; it was expected to be heard for a distance of twenty miles, and in fact was barely heard beyond the limits of Montmartre parish.

CARPENTERS' COMPANY.—The annual examination for shop and outdoor foremen, &c., held by the Carpenters' Company, took place at their hall and at the Company's Trades Training Schools, Great Titchfield-street (for the practical work), on June 10 and 13. Among the examiners present were Messrs. J. Wolfe Barry, C.B. (President of the Institute of Civil Engineers), F. C. Penrose, F.R.S. Professor Banister Fletcher, Professor T. Roger Smith, and Mr. Beresford Pite (President of the Architectural Association). Of the candidates who presented themselves the following passed, the names being arranged in order of merit:—Jas. Williamson, extra silver medal. First-Class Certificate:—Jas. Clark, silver medal; J. J. L. Oakey, bronze medal; J. T. Hall; I. G. Clarke; R. C. Freeman; H. Harrington; G. T. Claydon; and (equal) T. B. Kidner and F. Hibberd. Second-Class Certificate:—George Ayres; H. G. Owen; L. H. Bennett; W. O. Jordan; A. T. Dermott; Jas. Nowell; A. E. Atkins; F. Bull; W. Middleton; Jas. Cluff; W. E. Lewis; H. Eustice; G. F. Hicks; Chas. Phillips; W. A. Cross; A. A. Reed; J. E. Pearce; T. Pilgrim (equal); W. A. Hill; I. G. Andersen; H. Haynes; F. S. Judd; H. C. Williams.

SALE OF WAREHOUSE PROPERTY, BUILDING LAND, &c.—Messrs. Fuller, Horsey, Sons, & Cassell will sell by auction on the 16th prox. the freehold warehouse property in Christian-street, St. George's in the East, occupying a ground area of 30,700 square feet; nineteen freehold shops and dwelling houses in Grove-street and Cable-street, E.; a freehold public-house; four leasehold railway arches, and a plot of freehold building land. The principal lot is lot four, which comprises a plot of building land having frontages of 237 ft. to Christian-street, and 194 ft. to Grove-street, by an extreme depth of 143 ft. The buildings at present occupying the site are arranged as a sugar refinery.

CAPITAL AND LABOUR.

THE DISPUTE IN THE BUILDING TRADE AT KETTERING.—The dispute at Kettering in the building trade, which has been existing now for some weeks, has been practically settled, the settlement being indirectly due to the efforts made by Messrs. Gotch and Saunders, architects. On the 6th inst. Mr. H. F. Henson, the President of the Master Builders' Association, received a letter from Messrs. Gotch and Saunders, and a meeting of the employers was held within a few hours of the receipt of the letter. It was then decided to ask three of the men's representatives to confer with the masters, which was done during the afternoon, and at that meeting certain overtures were made to the men's representatives, which, however, could not be accepted without the matter being placed before the men. This was done at a specially-convened meeting held on Saturday night, and the conditions stipulated by the masters that the best carpenters and bricklayers received 7½d. per hour and best labourers 5d. (inferior workmen to be rated by the employer or foreman) were accepted. As regards the rules, there were only two upon which there was any dispute—namely, "That no labourer shall do bricklayers' work, and no bricklayer labourers' work," and the rule relating to bricklayers' apprentices. Upon this matter a Board of Arbitration was formed, consisting of four employers and four workmen, whilst the appointment of an umpire was deferred to a future meeting.

STRIKE IN THE BUILDING TRADE AT SALE.—The bricklayers and bricklayers' labourers of Sale and Ashton-on-Mersey came out on strike recently. The former have been in receipt of ninepence an hour and the latter of sixpence. The bricklayers demand an increase of ½d. per hour in their wages and a further advance in another three months of an additional ½d., while the labourers are striking for an additional ½d. per hour. The ruling Manchester prices for labour in the building trade are bricklayers 10d. an hour and labourers 6½d., and the Sale men are agitating for similar terms to be granted them. About ninety men were affected by this strike, but of these a considerable number have obtained work outside the district. In Altrincham bricklayers were recently conceded an additional ½d., and they are at present paid at the rate of 9½d. per hour.

THE DUBLIN BUILDING TRADE DISPUTE.—A special meeting of the Dublin Bricklayers' Society was held on the 9th inst. to consider the situation as between their body and the master builders. They came to the conclusion that there was no prospect of an early settlement of the dispute, and, therefore, decided to send 100 of their men to England. This will, it is stated, practically exhaust the list of unemployed members of the Bricklayers' Society.

LEGAL.

THE LONDON BUILDING ACT, 1894, AND SKY-SIGNS:

CASE IN THE DIVISIONAL COURT.

THE case of the London County Council *v.* The Savoy Hotel came before a Divisional Court of Queen's Bench, composed of Mr. Justice Cave and Mr. Justice Wills, on the 12th inst., it being a special case stated by Mr. Vaughan, the Metropolitan Police Magistrate, raising the question whether the sign on the roof of the Savoy Hotel was a sky-sign within the meaning of the London Building Act, 1894.

It appeared from the statement of Mr. Horace Avory, who represented the appellants, the London County Council, that in July last the proprietors of the hotel in question were summoned for having unlawfully retained a sky-sign without the licence of the County Council, contrary to section 128 of the London Building Act, 1894. The sign complained of consisted of a series of boards to which were attached embossed letters in metal frames. The boards, which were fixed by means of iron rods, were 118 ft. in length, and 7 ft. to 8 ft. in height, and the letters forming the words were 5 ft. in height. The Magistrate found that the boards were visible against the sky from the Embankment and other places, but that no portion of the letters forming the words "Savoy Hotel and Restaurant" was visible against the sky, but only against the boards, and held that the letters were not a sky-sign within the meaning of the statute.

Mr. Avory said that the Act of 1894 laid down that the term "sky sign" should apply to any sign wholly or in part upon, over, or above any building, and he submitted that what was complained of in the present case was a sky sign within the meaning of that statute.

Mr. Dickens, Q.C., who appeared with Mr. Marshall Hall for the respondents, the proprietors of the Savoy Hotel, contended that the sign in question was not upon, over, or above any building or structure, and therefore did not come within the meaning of the statute.

At the conclusion of the arguments of counsel, Mr. Justice Cave held that the sign complained of was a sky sign, and that the magistrate had come to a wrong conclusion as to the meaning of the Interpretation Clause. He thought that the case ought to go back to the magistrate with an expression of opinion that he ought to have convicted.

Mr. Justice Wills concurring, the appeal was accordingly allowed with costs.

ANCIENT LIGHTS AT PENTONVILLE:

HANDFORD *v.* EAST END DWELLINGS CO.

ON Tuesday, in the Chancery Division of the High Court of Justice, the case of Handford *v.* the East End Dwellings Co., Ltd., came before Mr. Justice Romer. It was an action in which the plaintiff, Miss Eliza Ann Handford, spinster, sought an injunction restraining the defendant company, of 24, Old-square, Lincoln's-inn, from building and permitting to remain built upon certain ground of the defendants' abutting on Winchester-street, Pentonville, in the county of Middlesex, any building so as to obstruct or interrupt the access of light to any of the ancient windows and apertures of the plaintiff's building, now and heretofore used as a cow-house at the rear of the plaintiff's houses, numbered 55, 57, and 59, Collier-street, Pentonville, adjoining the said ground. The plaintiff also claimed a similar order as to the alleged interference of air.

For the defence the defendants denied existence of five or any other windows upon the south side of the cow-house. There were, however, five apertures, which had always been filled up by solid wood louvre shutters. These apertures, they said, had never been used as windows, and they were so constructed as not to admit light. Moreover, the defendants did not admit that there were, or are, any other apertures capable of being used for the purposes of ventilation on the south side of the cow-house; and, again, that the access of light was not enjoyed previous to the commencement of this action.

Mr. Hopkinson, Q.C., and Mr. Whittaker appeared for the plaintiff, and Mr. Birrell, Q.C., and Mr. Theobald for the defendants.

The learned Judge, at the conclusion of the evidence, said that as regarded light, the evidence was very conflicting; and all he could say was that it had not been established to his satisfaction that the louvre shutters had blocked out the air. It followed that, in his lordship's opinion, the plaintiff had established her claim that these louvre windows were ancient lights. Then he thought there had been undoubtedly an interference with the light; and although he did not say that the damages were heavy, he did think they must be held, under the circumstance, to be substantial. That being so, he directed an inquiry as to what amount of damage had been suffered by the interference with the light of the louvre windows, and also as to the other smaller lights which had been mentioned. He did not think the injury to the smaller lights would be found to be substantial. There would, therefore, be an inquiry as to damages in regard to the interference with the light; and with regard to the question of air, he came to the conclusion of fact that there had been no serious interference with any access of air properly so called. All he had now to do was to deal with the question of costs, which he dealt with thus:—The plaintiff to be paid her costs of the action, except so far as they had been increased by her claim as to the interference with the access of air.

Judgment for the plaintiff with costs accordingly.

MEETINGS.

FRIDAY, JUNE 19.

Royal Institution.—Mr. T. C. Martin (of New York) on "The Utilisation of Niagara." 9 p.m.

SATURDAY, JUNE 20.

Edinburgh Architectural Association.—Annual Excursion: visit to St. Andrew's.

MONDAY, JUNE 22.

Royal Institute of British Architects.—Presentation of the Royal Gold Medal for the promotion of architecture to Mr. Ernest George for his executed works as an architect. A collection of water-colour drawings by Mr. Ernest George will be exhibited at the meeting, together with a selection of prints and drawings forming part of the Institute collection. A few descriptive notes on the latter will be read by Mr. A. S. Flower, Hon. Sec. Literature Committee. 8 p.m.

WEDNESDAY, JUNE 24.

Builders' Foremen and Clerks of Works' Institution—Half-yearly meeting of the Directors. 8 p.m.

THURSDAY, JUNE 25.

Association of Municipal and County Engineers.—Annual meeting, Brighton.

FRIDAY, JUNE 26.

Association of Municipal and County Engineers.—Annual meeting, Brighton (continued).

SATURDAY, JUNE 27.

Association of Municipal and County Engineers.—Annual meeting, Brighton (concluded).

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

2,786.—SUPPORTING LAVATORY BASINS, &c.: *M. J. Adams.*—Consists (1) in the use of a basin or urinal in combination with a pier pedestal, or brackets, to which the edge of a basin by a recess in one and a corresponding projection in the other is fitted; (2) the use of a recessed bracket for supporting basin.

8,777.—AUGER AND SCREW BITS: *G. Renshaw.*—To obtain improvements patentee constructs double twist auger or screw bits with single cutting point at the angle of first twist, the remainder twist not being carried quite to the point. A solid space is thus left, which forms a plug for three parts of the bit circle, and which acts as a conductor for the point whilst boring. Patentee further intends said plug to carry the core, turned out away from point, thus obviating clogging.

9,510.—FLUSHING APPARATUS FOR CISTERNS, &c.—*J. B. Ledgard.*—The invention consists in a flushing apparatus for cisterns, tanks, &c., forming the flush without taking the liquid through the displacer chamber or cylinder by causing the displacer or piston to create a suction or vacuum in the inlet and branch pipes; also, by means of the said branch pipe, discharging the whole contents of the cistern or tank.

10,247.—GIRDERS AND STRUCTURAL IRONWORK FOR BRIDGES, ROOFS, &c.: *H. Clark.*—The object of this invention is to wholly or largely dispense with the use of bricks to form the connexion between the tie-bars or struts of girders, &c., and the webs, flanges, &c., to which they have to be secured. To effect this, patentee adopts "union blocks" of malleable iron in cast steel, furnished with dockets or lugs to receive ends of tie-bars, &c. The invention relates to girders of a trestle, lattice, or bowstring type, &c., as used in bridge-work, or for roofs, piers, &c.

12,987.—SEATS OF WATER CLOSETS, &c.—*P. F. McHugh.*—In closets where pan, pail, &c., is boxed in, patentee adopts for combination of a sliding seat and riser or risers fitted in right-angled iron or wood supports.

13,004.—WINDOW-SASH HOLDER: *L. A. Heinzerling.*—Concerns a device adapted to check a frictional bearing substantially throughout the entire length of the sash. This is effected by fixing on the window frame a vertical toothed plate, in which a vertical plate, having similar but oppositely inclined teeth, may be slid up and down. By means of a strut fitted in from movable bar, sash can be locked or unlocked.

13,140.—REMOVABLE SASH FRAMES: *J. Jones.*—The invention consists in—(1) In sliding window sash frames, making the lower portion of the parting bead and of the inside bead and lining at one or both sides of the frame separate from the frame, and removably connected thereto, so as to permit of the sashes being readily removed and replaced; and (2) in a sliding window sash-frame provided at one or both its sides with a removable bar forming the lower portion of the parting-bead, and said sash-frame also having portion of inside bead and lining made separate therefrom but hinged thereto.

14,187.—VITREOUS ARTIFICIAL STONE: *A. Hinsch.*—Patentee obtains a variegated vitreous artificial stone by

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Repairs and Painting	Islington Vestry	J. P. Barber, Vestry Hall, Upper-street, N.	June 22
Flagging, &c. Hall-road	Thornhill(Yorks)U.D.C	S. W. Parker, Surv. Central Offices	do.
School, Rosebery-street	Loughborough Sch. B.	G. H. Barrowcliff, Millstreet, Loughborough	June 23
Two Semi-detached Villas, Skircoat, Halifax		Utley & Gray, Archt. 10, Waterhouse-st.	do.
*Brick and Concrete Sewer	Borough of West Ham	L. Angell, Town Hall, Stratford, E.	do.
	do.	do.	do.
*Iron Building	do.	do.	do.
Street Works	Barrow-in-Furness Corporation	Boro' Engr. Town Hall	June 24
Flagging, Buckley-lane, &c	Farnworth U.D.C.	W. J. Lomax, Surv. 11, Fold-street, Bolton	do.
Road Works, Front-street	Stanley U.D.C.	J. Routledge, Surv. Council Offices	do.
Pipe Sewers	Bridgewater T.C.	F. Farr, C.E. Bridgwater	do.
Sewers, &c.	Pudsey (Yorks) U.D.C.	R. W. Cass, Surv. Council Offices	do.
Public Offices	Kidsgrove U.D.C.	Wood & Hutchings, Archt. Tunstall	do.
*Redecorating Board Room	Hackney Union	F. R. Coles, Union Offices, Hackney	do.
*Sliding Screens and Ventilation	do.	do.	do.
*Sand and Ballast	Mile End Vestry	J. M. Knight, Bancroft-road, Mile End-road	do
*Supply and Fixing Cupboards	Met. Asylums Board	Hospital, Seagrave-road, Fulham, S.W.	June 25
Schools and Residences	Iver (Bucks) Sch. Bd.	Eves & Hardman, Archt. 54, High-st. Uxbridge	do.
Offices and Show-room	Ilkley U.D.C.	Clerk, Council Offices, Ilkley	do.
Monastery, Kinsale, Ireland	Presentation Brothers	A. Hennessy, Archt. South Mall, Cork	do.
Additions to Schools, Causeway, Fishponds, Bristol		E. W. Barnes, Archt. Guildhall-chamb. Bristol	do.
House, Kincardine O'Neill, N.B.		Jenkins & Marr, C.E. 16, Bridge-street, Aberdeen	do.
*Extension of Electric Lighting Station	Vestry of St. John's, Hampstead	Clerk, Vestry Hall, Haverstock-hill, Hampstead	do.
*New Machinery, &c. Workhouse	Fulham Union	A. S. Snell, 22, Southampton-bldgs, Chancery-lane	do.
Five Cottages, Hipperholme, Halifax		Jackson & Fox, Archt. 22, George-street	June 26
Sewers, Crosby, near Maryport	Cockermouth R.D.C.	J. B. Wilson, C.E. Cockermouth	do.
Corn Mill, St. Michael's-lane	Derby Corporation	Boro' Engr. Babington-lane, Derby	do.
Board Room, &c. Old Bablake School	Coventry Municipal General Charity Trst.	H. W. Chattaway, Archt. Trinity Churchyard	June 27
*Hospital	Worcester Corp.	H. Rowe, Worcester-chambers, Worcester	do.
*Public Conveniences, Kennington-park	LondonCountyCouncil	Archt's Dept. County Hall, Spring-gardens, S.W.	June 29
Nine Houses and Two Shops, Gilfach Goch	T. Thomas	J. Rees, Archt. Pentre, Glam.	do.
Additions to Newton Rigg Farm, near Penrith	Cumberland C.C.	G. D. Oliver, Archt. The Courts, Carlisle	do.
Shop and House, Seaton	Workington Indus. Prov. Soc.	Scott & Co. Archt. Victoria-buildings, Workington	do.
*Sewers	Wandsworth Bd. of W.	Board of Works Office	do.
*Covered Seats	Southend Corporation	Boro' Surveyor's Office	June 30
*Kerbing, Metalling, &c.	Lewisham Bd. of Wks.	Surv. Dept. Bd. of Wks. Office	do.
*Paving Works	LondonCountyCouncil	Engrs. Dept. County Hall, Spring-gardens, S.W.	do.
Warehouse and Stable, Lister-lane, Halifax		Jackson & Fox, Archt. 22, George-street	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Portland Cement	Hove U.D.C.	Town Surv. Town Hall, Hove	
Rectory, Enniskillen	Rev. Canon Ovenden	T. Elliott, Archt. Enniskillen	July 1
*Extension, Electric Light Station	Ealing U.D.C.	C. Jones, Council Offices	do.
*Mansion House of Buckland, Brecon	J. P. Gwynne Holford	Stephen W. Williams, Rhayader, Radnorshire	do.
*Laboratory, &c. Archbishop Tenison's Schools	Trustees	Chas. Mason, St. Martin's Town Hall, Charing Cross	July 4
Additions to Schools, Wainstalls	Halifax Sch. Bd.	Horsfall & Son, Archt. Lord-st Chambers	do.
Granite Road Metal	Desborough U.D.C.	W. T. Streather, Surv. High-street	do.
*Sand, Stone, Drain Pipes, &c.	Vestry of St. Martin's-in-the-Fields	Chas. Mason, C.E. Town Hall, Charing Cross	do.
*Sewering and Levelling	Hornsey U.D.C.	E. J. Lovegrove, Council Offices	July 6
*Granite	Hanwell U.D.C.	Council's Office	do.
*Factory, &c. Coventry	Triumph Cycle Co. Lim.	H. W. Chattaway, Archt. Coventry	do.
*Sewerage	Shoreditch Vestry	T. R. Roscoe, Vestry Offices	July 7
*Roads, Tramways, &c.	Metropolitan Asylums Board	A. & C. Harston, 15, Leadenhall-street, E.C.	July 13
*Additions and Alterations, Workhouse	Eastry Union	W. J. Jennings, 4, St. Margaret's-st. Canterbury	do.
*Hospital	Borough of West Ham	L. Angell, Town Hall, Stratford, E.	July 14
*Sewers, Manholes, &c.	Uxbridge U.D.C.	Nicholson Lailey, 16, Gt. George-street, S.W.	do.
*Refuse Destructor, Chimney Stack, &c.	Handsworth U.D.C.	E. Kenworthy, Council House, Handsworth, Staffs	July 20
*Infectious Disease Hospital	Hastings Corporation	P. H. Palmer, Town Hall	do.
*Underground Conveniences	Commrs. of Sewers	The Engineer, Guildhall	July 21
Guernsey Granite	Folkestone Corp.	J. White, Boro' Engineer	No date
School, Leadhall-lane, Harrogate	F. A. Stuckey	G. Bland, Archt. Harrogate	do.
Two Houses and Shops, Thorpe Hesley, Leeds	G. Bennett	H. Smith, Archt. Wortley-road, Thorpe Hesley	do.
Alterations to Premises, Mosley-st. Newcastle-on-Tyne		J. W. Rounthwaite, Archt. Newcastle	do.
Additions to School, Killinghall, Harrogate		G. Bland, Archt. Harrogate	do.
Three Pairs Villas, Esher		F. A. Powell, Archt. 344, Kennington-road, S.E.	do.
Tower and Spire to Church, Clifden, Co. Galway		J. J. O'Callaghan, Archt. 16, Nassau-st. Dublin	do.
Business Premises, Meanwood-road, Leeds		W. Smith, 90, Albion-st. Leeds	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Clerk of Works and Assistant	Manchester Rivers Committee	Three Guineas and Two Guineas respectively	June 27
*Borough Surveyor and Engineer	Ramsgate T.C.	300*l.* increasing to 400*l.* per annum	June 29
*Surveyor and Inspector of Nuisances	Lymington T.C.	Inspector 45*l.* & Surveyor 45*l.*	June 30
*Quantity Surveyor	Southampton Corp.	160*l.* per annum to commence	do.
*Temporary Assistant	Beckenham U.D.C.	3*l.* 3*s.* per week	July 1

Those marked with an asterisk (*) are advertised in this Number. ***Contracts, pp.*** iv., vi., viii., & ix. ***Public Appointments, pp.*** xviii. & xx.

packing fragments of glass, pottery-ware, natural vitrifiable stones, &c., in moulds of iron, or refractory material, and subjecting same to intense gaseous heat.

21,537.—TERRA-COTTA BUILDING BLOCKS: *J. Holroyd.*—In order to prevent terra-cotta blocks from becoming discoloured on their exterior surfaces by any salt or chemical exuded from the concrete or other filling, patentee coats interior of blocks with an impervious solution or glaze, preferably applied by means of a spray.

NEW APPLICATIONS FOR LETTERS PATENT.

JUNE 1.—11,847, J. Brindley, Tiles and Quarries.—11,856, H. Cartledge, Potter's Kilns.—11,873, D. Andrews, Disinfecting Gas escaping from Sewers.—11,905, E. Hauff, Circular Saws and Rotary Planing Machinery.

JUNE 2.—11,944, L. Gorisse, Door Checks.—11,967, T. Turnbull, Paint or Varnish for Damp Resisting, &c.—11,979, H. Jessop and L. Barnett, Wood-working Machinery.—11,983, R. Lawson, Draught, Dust, and Water Excluder, specially applicable to Windows, sliding in a groove.—12,016, J. Edmundson, Sanitary Appliances applicable for tenement houses, &c., useful more especially for preventing stoppage of the drains.

JUNE 3.—12,069, R. Lines, Machines for Cutting and Trimming Wood, &c., to an angle, bevel, mitre, square, &c.—12,072, R. Beckett, Safety Ladder Platform, to be used on roofs of houses.—12,099, J. Martin, Water-closet Pans or Basins and Fittings.—12,116, C. Mason, Asphalte Pavements.—12,135, E. Nelson, Damp-proof Material for Roofing, &c.—12,151, W. Haddon, Sash-fasteners.—12,169, A. Boult, Artificial Stone.

JUNE 4.—12,184, F. Lynde, Lavatory Basins, Baths, &c.—12,193, H. Inwards, Self-adjusting Bracket for Outside Villa Sunblinds.—12,210, G. Hardie, Apparatus for Cleaning Drain-traps, &c.—12,229, M. Logan, Stall Flooring.

JUNE 5.—12,316, W. Rayment, Door Handles, and Method of Securing same.—12,324, F. Price, Flushing Cisterns.—12,368, W. Owen, Artificial Stone, Marble, &c.

JUNE 6.—12,383, J. Hazlitt, Locking or Securing Hold-fast Bolts.—12,412, F. Lubatzus, Ladder-shaped Safety Apparatus for Work to be performed outside Windows.—12,458, C. Sabow, Ladder Scaffolding.—12,478, D. Brümmer, Portable Buildings.

PROVISIONAL SPECIFICATIONS ACCEPTED.

7,934, T. Howard and J. Hallan, Ventilation Window Fastener.—8,436, T. Pickford, Whitewash Brush.—8,531, H. Swain, Chimney-pot and Ventilator.—9,324, M. Kaelin, Apparatus to be used in the Manufacture of Frames, such as Picture Frames, &c.—9,375, G. Ashton, Locking Window Fasteners.—10,481, G. Deacon, Apparatus for the Adjustment of Fanlights, &c.—10,562, R. Brackenbury, Mounting Sashes in Window Frames.—10,686, J. Lohmeyer, Combined Set-Square and Ruler.—10,815, La Roy Griffin, a New Substance especially applicable for making Building Blocks, Slabs, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

14,567, J. Whelan, Controlling the Admission of Water to Cisterns or Tanks.—15,030, R. Doenitz, Ventilating Elbow Pipe for Stove.—5,581, A. Richartz, Window Fastener.—8,497, J. Wilson, Construction of Buildings.—9,361, M. Adams, Earth Closet.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

June 2.—By MORRIS & PLACE (at Sutton-in Ashfield).

Hucknall-under-Huthwaite, Notts.—Enclosures of land, 41 a. 2 r. 3 p., c.	£2,289
House and shop and 1 a. 2 r. 10 p., c.	320

June 3.—By HEPPER & SONS (at Cleckheaton).

Cleckheaton, Yorks.—Tofts-st., 6 plots of land, area 5,273 yds., f.	1,912

By E. STOOKE (at Hereford).

Holmer, Hereford.—"Hopbine Villa" and 16 a. 2 r. 29 p., f.	1,800

By WALTON & LEE (at Oundle).

Warmington, Northants.—"Fotheringay Meadow," 5 a. 3 r. 10 p., f.	220

June 4.—By EDWIN EVANS.

Kennington.—93 and 97, Royal-rd., u.t. 34 yrs., g.r. 10*l.*	400
95, 99, 101, 103, and 105, Royal-rd., u.t. 25 yrs., g.r. 25*l.*	915
20, Aldred-rd., u.t. 27½ yrs., g.r. 5*l.*	220

By W. JACOBS.

Edgware-rd.—Nos. 335 and 347, u.t. 33 yrs., g.r. 40*l.*, r. 180*l.*	1,505
Willesden.—Meyrick-rd., "Albert House," f., r. 30*l.*	275

By W. STEVENS.

Dalston.—48, Graham-rd., u.t. 55½ yrs., g.r. 5*l.* 10*s.*, r. 45*l.*	410

By WHEELER & SON.

South Kensington.—25, Sydney-st., u.t. 28¾ yrs., g.r. 6*l.*, c.r. 65*l.*	425
Shepherd's Bush.—8, Percy-rd., u.t. 80¾ yrs., g.r. 7*l.*	200

By L. FARMER.

Finsbury.—39, Moor-lane, u.t. 60 yrs., g.r. 75*l.*, r. 410*l.*	4,650
Bournemouth, Hants.—Alum Chine-rd., "Heatherbank," f.	1,090
Camberley, Surrey.—Crawley Ridges-rd., two building plots, f.	205

By NEWBON & Co.

Hornsey.—42 to 48 (even), Birkbeck-rd., f., r. 87*l.*	1,170
1 to 11 (odd), Birkbeck-rd., f., r. 126*l.*	1,685
74, 75, 77, 79, and 81, St. Mary's-rd., f., r. 123*l.*	£1,265
76, 78, 80, and 82, Westfield-rd., f., r. 88*l.*	940
Deptford.—20 and 21, Strickland-st., u.t. 49 yrs., g.r. 4*l.*	470
Stroud Green.—8, Victoria-ter., u.t. 79 yrs., g.r. 7*l.* 10*s.*, r. 36*l.*	350
Holloway.—11, Alexander-rd., u.t. 62 yrs., g.r. 6*l.*, r. 30*l.*	270

By STIMSON & SONS.

Clapham.—Trigon-rd., f.g.r. 21*l.* 8*s.*, reversion in 29 yrs.	1,410
Euston-rd.—Fitzroy-pl., f.g.r. 24*l.* reversion in 27 yrs.	1,375
Lambeth.—45, York-st., u.t. 21 yrs., g.r. 5*l.* 5*s.*	370
Old Kent-rd.—Nos. 777, 781, 783, 785 & 787, & l.g.r. 21*l.*, u.t. 15 yrs., g.r. 76*l.* 4*s.*, r. 200*l.*	1,110

By BUCKLAND & SONS.

Peckham.—20 to 26 (even), Nunhead-lane, and enclosure of land in rear, f., r. 188*l.*	2,970
Bloomsbury.—23, Hart-st., and 5, Bloomsbury-sq., u.t. 37 yrs., g.r. 150*l.*, e.r. 676*l.*	3,200

By T. S. FALLOWS (at Birmingham).

Hall Green, Worcester.—"Hillfield Farm," 30 a. 0 r. 13 p., f.	2,400
Yardley Wood, enclosure, 2 a. 1 r. 7 p., f.	505

By W. B. HALLETT (at South Molton).

Rose Ash, Devon.—"The Rose Ash Estate," 214 a. 0 r. 7 p., f.	7,650

By A. C. LOVEVS (at Moretonhampstead).

Moretonhampstead.—Enclosures of land, 63 a, f.	3,915

By CUMBERLAND & SONS (at Sutton-on-the-Hill).

Dalbury Lees, Derby.—Farmhouse and enclosures, 58 a. 1 r. 18 p., f.	3,406
Sutton-on-the-Hill, Derby.—Three farmhouses and enclosures, 50 a. 0 r. 1 p., f.	5,758

June 5.—By GREEN & SON.

City of London.—Cornhill, f.g.r. 1,100*l.*, reversion in 39 yrs.	42,500

By HORNE, SON, & EVERSFIELD.

Bermondsey.—1 to 10, Queen's-pl., f., e.r. 130*l.*	550

By G. H. Masterman & Co.

Stepney.—52, Harford-st., u.t. 21 yrs., g.r. 2*l.* 12*s.*	145
Peckham.—125 to 133 (odd), Victoria-rd., u.t. 27 yrs., g.r. 10*l.*	415

By SLADE & BUTLER.

Peckham.—7, York-grove, u.t. 16½ yrs., g.r. 6*l.*, r. 40*l.*	620

By WILLIS & CROUCH.

Bermondsey.—Salisbury-st., f.g.r. 25*l.*, reversion in 79½ yrs.	200

By WINCH & SONS.

Brenchley, Kent.—"The Knowle," and 97 a. 3 r. 1 p., f.	4,000

By BROAD & WILTSHIRE.

Peckham.—198, Peckham-rye, f., r. 40*l.*	1,005
73, 75, 79, 87, 89, 91, and 93, Gordon-rd., f., r. 184*l.*	2,545

Soho.—2, Portland-st., f., r. 65*l.* £875
Bow.—6 and 8, Caxton-st., u.t. 50½ yrs., g.r. 9*l.*... 550
By DRAWBRIDGE & ANSELL.
Lindfield, Sussex.—"The Anchor Inn," public-house, and 87 a. 0 r. 32 p., f. 3,200
By PERCY SMITH & Co.
Highbury.—68, Hamilton-rd., u.t. 54 yrs., g.r. nil, r. 58*l.* 635
By C. P. WHITELEY.
Edmonton.—Lower Fore-st., three plots of building land, f. 690
1 to 6, Lime-villas, f. 1,740
1, Commercial-ter., f., r. 20*l.* 350
1 to 5, George-st., f. 690
By J. HARRIS & SON (at Alresford).
Alresford, Hants.—Enclosures of land, 35 a. 0 r. 30 p., f. 1,165
Freehold farm, containing 22 a. 2 r. 18 p. 1,125
By COOK & BIRMINGHAM (at Exeter).
Clysthydon, Devon.—"Twinings Farm" and "Road Park," 27 a 0 r. 23 p., f. 1,400
By DACRE & SON (at Otley).
Otley, Yorks.—Enclosures of land, 7 a. 1 r. 39 p., f 1,375
By W. LUDLOW & BRISCOE (at Birmingham).
Solihull, Warwicks.—Warwick Road, 23 plots of building land, f. 4,680
"Malvern Hall" and 148 a. 2 r. 16 p., f. 12,500
June 6.—By T. WALKER (at Burford).
Burford, Oxon.—Freehold farm, containing 134 a. 0 r. 26 p. 650
"Bury Barns Farm," 244 a. 0 r. 5 p., f. 2,700
Freehold cottage and 4 a. 1 r. 28 p. 380
Residence, cottage, and 2 a. 3 r. 30 p., f. 735
Enclosure of land, 18 a. 1 r. 28 p., f. 560
June 8.—By G. E. SWORDER & SONS.
Little Hadham, Herts.—"Westfield Farm," 239 a. 1 r. 23 p., f. 2,165
Three cottages and an enclosure, 5 a. 0 r. 36 p., f. 235
Sawbridgeworth, Herts.—"Little Pennys Farm," 99 a. 3 r. 5 p., f. 1,750
By T. WOODS.
Hounslow, Middlesex.—Bath-rd., "Blenheim Lodge," u.t. 58 yrs., g.r. 15*l.*, e.r. 80*l.* 645
Plaistow.—69 and 71, Western-rd., f., r. 31*l.* 4*s.* .. 310
Barnsbury.—13 and 15, Offord-rd., u.t. 44½ yrs., g.r. 14*l.*, r. 80*l.* 700
By WEATHERALL & GREEN.
Hertford.—40, 42, and 44, St. Andrew-st., f., r. 66*l.* 1,020
Back-lane, a block of malt houses, f., r. 29*l.* 445
Amwell, Herts.—Two enclosures of land, 3 a. 3 r. 23 p., f. 355
An enclosure of land, 7 a. 1 r. 38 p., f. 435
Enfield Lock.—Main-rd., "Freezywater Farm," 23 a. 3 r. 27 p., f. 3,525
June 9.—By OSBORN & MERCER.
Woodhay, Berks.—"Northenby" and 71 a., f. 8,250
By E. & H. LUMLEY.
Bloomsbury.—14, Taviton-st., u.t. 51 yrs., g.r. 33*l.* 850
By G. JOSLIN.
Paddington.—13 and 14, Windsor-gardens, f., r. 58*l.* 12*s.* 540
By H. C. HICKS.
Kennington.—24, Hanover-gardens, u.t 49 yrs., g.r. 4*l.*, r. 34*l.* 240
Brixton.—46, Elliott-rd., u.t. 67 yrs., g.r. 6*l.* 6*s.*, r. 30*l.* 260
Stockwell.—10, Aytoun-rd., u.t. 46 yrs., g.r. 6*l.* 10*s.*, r. 34*l.* 250
Clapham.—191, 193, and 201, South Lambeth-rd., u.t., 69½ yrs., g.r. 30*l.* 10*s.*, r. 152*l.* 1,400
By J. D. WOOD & CO.
Sandwich, Kent.—"Statenborough House" and 17 a. 1 r. 12 p., f. 3,750
Finsbury-pk.—61 and 63, Marriott-rd., u.t. 75 yrs., g.r 12*l.*, r. 76*l.* 730
By DRIVER & CO.
Streatham.—High-rd., a corner building site, f. ... 500
20 and 21, Broadway, f., r. 140*l.* 2,010
Gleneagle-rd., "Glasson," f., r. 65*l.* 900
By DEBENHAM, TEWSON, & CO.
Newhaven, Sussex.—"Meeching Pl." and 2 a. 1 r. 12 p., f. 1,900
A block of tenements and enclosures, 19 a. 2 r. 10 p., f. 7,900
City of London.—27, Wood-st., area 800 ft., f., r. 450*l.* 9,500
Mayland, Essex.—A freehold estate, containing 371 a. 0 r. 23 p. 4,000
By HEPPER & SONS (at Leeds).
Leeds.—20, Caledonian-rd. and 21, Tonbridge-st., f. 550
Headingley, Yorks.—28, Monk Bridge-rd., f., r. 16*l.* 250
June 10.—By RUSHWORTH & STEVENS.
St. James'.—22, James'-st., f. 7,800
53, Catherine-st., f. 1,500
By A. J. SHEFFIELD.
Bow.—31, 33, 65, and 67, Bloomfield-rd., u.t. 71 yrs., g.r., 20*l.* 995
Poplar.—15, Nairn-st., u.t. 77 yrs., g.r. 4*l.* 5*s.* 220
22, Bromley Hall-rd., u.t. 77 yrs., g.r. 4*l.* 5*s.* ... 215
4 to 7, Prospect-pl., u.t. 73 yrs., g.r. 20*l.* 100
Forest Gate.—62, Selwyn-rd., u.t. 89 yrs., g.r. 6*l.*, r. 26*l.* 225
Bromley.—134, Devon's-rd., f., r. 43*l.* 15*s.* 350
Limehouse.—77 and 79, Locksley-st., u.t. 64 yrs., g.r. 8*l.* 620
By C. H. BROWN.
Pimlico.—229, Vauxhall Bridge-road, f., e.r., 40*l.* . 690
By DAVIS & BARROW.
Battersea.—33, 35, 39, and 43, Kathleen-rd., u.t. 91 yrs., g.r. 30*l.*, r. 136*l.* 1,200
By W. EYDMANN & SON.
Acton.—Acton-lane, enclosure of land, 3 a., f. 2,075
By VENTOM, BULL, & COOPER.
Islington.—15, Essex-rd., area 700 ft., c. 455
By WALTON & LEE.
Great Marlow, Bucks.—"Weir Cottage," f. 1,930
By DOUGLAS YOUNG.
Houndsditch.—Nos. 28, 29, and 30, also 48 and 50, Duke-st., City leasehold, g.r. 15*l.* 7*s.* 6*d.*, fine 107*l.* 12*s.* 6*d.* 6,600
Camberwell.—234, Camberwell-rd., u.t. 24½ yrs., g.r. 5*l.* 6*s.* 8*d.*, r. 48*l.* 430
Stockwell.—Eastcote-st., a building site, area 19,700 ft., f. 1,980
Brixton.—29, Canterbury rd., u.t. 67¾ yrs. g.r. 8*l.* 10*s.* er 50*l.* 440
Old Kent rd.—123 and 125, Upper Grange rd., u.t. 25½ yrs. g.r. £10 395
Vauxhall.—13 to 19 (odd), Tyers st., u.t. 8 yrs. g.r. 8*l.* 8*s.* £155
111 to 123 (odd), Wickham st., Vauxhall, u.t. 23 yrs. g.r. 56*l.* 11*s.* 120
160a, 162 and 164, Vauxhall st. c 1,070
By MESSRS. SPELMAN (at Norwich).
Norwich.—Brunswick rd., "Cork's Nursery" and 1 a. 2 r. 27 p., f 2,400
By BROAD & WILTSHIRE (at Hastings).
Ore, Sussex.—4 plots of building land, 14 a. 0 r. 27 p., f 1,100
By H. J. BLISS AND SONS (at Edmonton).
Edmonton.—Brettenham rd., &c., plots of building land, f. 1,210
By LANCASTER & SONS (at Barnsley).
Brierley, Yorks.—Enclosures of land, 122 a. 2 r. 17 p., f. 11,245
South Kirkby, Yorks.—A freehold plantation, 30 a. 1 r. 12 p. 2,750
By MACQUIRE, TARRY, & MERRY (at Northampton).
Collingtree, Northants.—"Collingtree Tree Lodge Farm," 35 a. 3 r. 11 p., f. 1,250
Wootton, Northants.—"Stockwell Close," 2 a. 0 r. 31 p., f. 150
Northampton—71, Lorne-rd., f., r. 15*l.* 12*s.* 275
53, Lawrence-st., f., r. 11*l.* 4*s.* 160
114, Bailiff-st., f., r. 19*l.* 15*s.* 300
12, 14, and 16, Military-rd., f., r. 65*l.* 19*s.* 768
22 and 34, Oakley-st., f., r. 28*l.* 330
46, Leicester-st., and stabling off Oak-st., f. ... 250
41 and 43, Regent-st., f., r. 36*l.* 8*s.* 280
43, Ash-st., f., r. 15*l.* 12*s.* 140
83, Palmerston-rd., f. 220
37, Woolmonger-st., f. 173
Gurney-ter., two plots of land, f. 120
June 11.—By Messrs. CRONK.
Westerham, Kent.—"Pilgrim House" and 30 a. 1 r. 11 p., f. 2,040
By BRADSHAW BROWN, HOOPER, & PRICE.
Millwall.—27, Mellish-st., u.t. 45 yrs., g.r. 2*l.* 10*s.* 180
29, Mellish-st., u.t. 58 yrs., g.r. 2*l.* 10*s.* 180
39, 45, and 47, Mellish-st., u.t. 59½ yrs., g.r. 7*l.* 10*s.* 605
10, 12, and 14, Alpha-rd., u.t. 61¾ yrs., g.r. 9*l.* ... 510

***[Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent, r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.**

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.		
ton	8/0/0	0/0/0
Teak, E.I. ..load	11/0/0	26/0/0
Sequoia, U.S.ft.cu	2/0	3/1
Ash, Canada load	3/0/0	4/5/0
Birch. do.	3/10/0	5/5/0
Elm, do.	3/15/0	5/0/0
Fir, Dantsic, &c..	1/10/0	3/15/0
Oak, do.	2/5/0	3/15/0
Canada	5/15/0	7/5/0
Pine, Canada red	0/0/0	0/0/0
Do. Yellow	2/10/0	4/15/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	5/0/0	6/10/0
Wainscot, Riga &c., log...	2/5/0	4/10/0
Odessa, crown....	2/5/0	4/10/0
Deals, Finland and & 1st std 100	7/10/0	9/0/0
Do. 4th & 3rd ..	7/10/0	8/10/0
Do. Riga	7/10/0	8/10/0
St. Petersburg, 1st yellow....	10/10/0	13/0/0
Do. 2nd yellow	8/10/0	10/10/0
Do. white	8/10/0	10/0/0
Swedish.....	7/10/0	16/0/0
White Sea.....	8/10/0	15/10/0
Canada, Pine 1st	23/5/0	23/10/0
Do. do. 2nd	16/0/0	17/0/0
Do. do. 3rd, &c.	8/0/0	10/15/0
Do. Spruce, 1st.	9/0/0	10/10/0
Do. do. 3rd and 2nd	7/10/0	8/10/0
New Brunswick	7/0/0	8/0/0
Battens, all kinds	5/0/0	20/0/0
Flooring boards, sq., 1 in. prep. 1st.	0/9/6	0/14/6
Do. 2nd.....	0/6/0	0/11/6
Other qualities—	0/5/0	0/6/6
Cedar, Cuba, ft.	/4½	/5
Honduras, &c.	/4	/5
Mahogany, Cuba	/4½	/6
St. Domingo cargo av.	/4½	1/3
Mexican, do. do.	/4	/5
Tobasco, do. do.	/5	/7
Honduras, do. ..	/5	/6½
Box, Turkey ton	4/0/0	15/0/0
Rose, Rio.....	7/0/0	16/0/0
Bahia	6/0/0	15/0/0
Satin, St. Doming	0/0/7	0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico	0/0/7	0/1/6
Walnut, Italian ..	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2/6/7½	c/c/o
Bar, Welsh, in London	5/12/6	5/15/0
Do. do. at works in Wales.....	5/2/6	5/5/0
Do. Staffordshire, in London....	6/0/0	6/10/0
COPPER—British cake and ingot	53/10/0	53/15/0
Best selected ..	54/0/0	54/5/0
Sheets, strong..	58/0/0	59/0/0
Chili bars	49/18/9	50/3/9
YELLOWMETALlb	0/0/4½	0/0/5
LEAD—Pig, Spanish ....ton	10/18/9	11/0/0
English com. brands	11/9/6	11/3/9
Sheet, English 6 lbs. per sq. ft. and upwards ..	12/0/0	0/0/0
Pipe	13/10/0	0/0/0
ZINC—English sheet.....ton	20/10/0	21/0/0
Vieille Montagne	21/15/0	0/0/0
Spelter	18/5/0	18/10/0
TIN—Straits	61/7/6	61/17/6
Australian.....	62/12/6	63/2/6
English Ingots..	65/0/0	66/0/0
Banca	62/10/0	63/0/0
Billiton	62/0/0	62/5/0
OILS.		
Linseed .....ton	17/12/6	0/0/0
Cocoanut, Cochin	26/10/0	26/15/0
Do. Ceylon	22/10/0	0/0/0
Palm, Lagos	20/10/0	c/0/0
Rapeseed, English pale	22/15/0	23/0/0
Do. brown	21/5/0	21/10/0
Cottonseed ref. ..	15/15/0	16/5/0
Oleine.....	17/0/0	18/10/0
Lubricating U.S.	0/6/0	0/7/3
Do. black	0/4/9	0/6/6
TAR—Stockholm barrel	19/6	1/0/0
Archangel.....	0/14/6	0/15/0
TURPENTINE—(American) ton	20/0/0	c/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BARKING (Essex).—For the supply of road metal, for the Barking Town Urban District Council. Mr. C. J. Dawson, Surveyor, Public Offices, Barking:—

	600 cube yards. 18 in. granite.	500 cube yards. 2 in. granite.
R. L. & J. Fennings..	12s. 3d. per cu. yd.	11s. 8d. per cu. yd.
W. Griffiths ..	12s. 5d. ,,	11s. 11d. ,,
W. Gibbs & Co.....	— ,,	10s. 9d. ,,
Mowlem & Co.	12s. 8d. ,,	12s. 2d. ,,
A. & F. Manuelle	12s. 0d. ,,	11s. 5d. ,,
G. Le Maitre*.....	11s. 0d. ,,	10s. 6d. ,,

	800 cube yards. Kentish flints.
Tuff & Miskin	3s. 8½d. per cu. yd.
W. Gibbs & Co.	4s. 3d. ,,
D. Jackson	4s. 1d. ,,
Smeed, Dean, & Co.	3s. 9d. ,,
Wells & Packham*	4s. 0d. ,,
J. Byford.....	3s. 11d. ,,

*Accepted.

BEESTON.—For alterations and additions and erection of schools, &c., at the rear of present M.N.C. Chapel, Beeston. Mr. A. H. Goodall, architect, Nottingham:—

W. Fletcher	£439	3	G. Mears, Beeston*..... £403 10
W. Turner	423	0	

*Accepted.

BOURNEMOUTH.—For the erection of a new residence for Colonel C. E. D. Bransom, at Southbourne-on-Sea. Mr. G. A. Bligh Livesay, architect. Quantities by Messrs. Jennings & Goater:—

W. J. Chinchen	£2,595		F. Hoare & Son £2,497
W. E. Jones & Son	2,542		W. Hoare 2,471
C. A. D. George & Harding	2,498		Jenkins & Sons 2,295
			T. McWilliam & Son* 2,229

*Accepted subject to modification.

BRENTFORD.—For the construction of effluent tanks, sludge-reservoir, &c., at the sewage works, for the Urban District Council, Mr. Nowell Parr, engineer, Clifden House, Boston-road, Brentford. Quantities by Mr. T. J. Carless, Westminster:—

H. King	£6,193	14 9	Cook & Co. £5,500 0 0
J. Mowlem & Co. ..	6,186	0 0	J. Ball 5,375 2 9
H. Weldon	5,908	12 0	Foord & Sons 5,375 0 0
F. Brunton	5,986	0 0	W. Cunliff..... 5,310 0 0
J. Bloomer	5,835	5 0	J. Barnes, Brentford (accepted) .. 5,150 10 0
J. Jackson.....	5,602	0 0	

BRIDLINGTON QUAY (Yorks.).—For the completion of an emporium, Marshall-street, for Messrs. J. M. Wilson & Son. Mr. J. Earnshaw, architect, Carlton-house, Bridlington Quay:—

R. Bailey	£622	18 6	J. Rennard, Bridlington Quay* £565 0 0
J. H. Hudson	620	0 0	

*Accepted.

BRUNDALL.—For erecting four bungalow residences, Brundall, Norfolk. Plans, specifications, and quantities by Messrs. G. Fitt & Co., architects, 1, Queen-street, Norwich:—

J. Youngs & Sons	£4,452		J. Evans..... £4,296
Scarles Bros.	4,400		J. Hurn, Surrey-road, Norwich (accepted) 4,120
R. Daws & Son	4,376		

CAERPHILLY (Mon.).—For taking down and rebuilding the "Globe Hotel," Caerphilly, for Messrs. Griffiths Bros., Limited, Newport and Blaina. Messrs. Lansdowne & Griggs, architects, Newport, Mon. Quantities by the architects:—

E. G. Groom.....	£1,192		W. Morgan..... £1,053 10 0
D. C. Jones & Co.....	1,184		T. Rossiter..... 945 0 0
Cox & Bardo	1,112		Newman & James 899 0 0
Hatherly & Carr.....	1,087		A. J. Colborn, Caerphilly (accepted) 847 15 7
Powell & Mansfield	1,070		

[Horton & Co., Taunton, too late, £1,000.]

CARDIFF.—For Institute and Mission-hall at St. Nicholas, near Cardiff. Messrs. Lansdowne & Griggs, architects, Newport, Mon. Quantities by the architects:—

Cox & Bardo	£1,308		Newman & James..... £1,070
Hatherly & Carr	1,277		Horton & Co., Taunton*.. 1,000
Powell & Mansfield	1,249		

*Accepted.

CARDIFF.—For the erection of fifty houses at Barry, for the Romilly Building Club. Mr. F. Gibson, architect, Midland Bank-chambers, Pontypridd:—

W. E. Willis	£7,900	0	Rendal, Corp, & Motton..... £6,702 0
Wm. Picton	7,850	0	
Jno. Griffiths	7,750	0	Chas. Jenkins & Sons, Porth, Rhondda Valley (accepted).... 6,710 0
Jas. Snelling	7,662	10	
F. R. Smithers	7,500	0	

CATERHAM.—For the erection of an isolation infirmary at the Imbecile Asylum, for the Metropolitan Asylums Board. Mr. E. T. Hall, architect, 57, Moorgate-street, E.C.:—

Curtis & Co.....	£7,536		Foster & Dicksee £5,074
Lawrance & Son	5,363		Holliday & Greenwood .. 5,073
Bulled & Co.	5,269		Marriage & Co. 5,038
Williams	5,250		Leslie & Co..... 4,993
Kilby & Gayford	5,080		White, Bedford (accepted) 4,502

CHELMSFORD.—For the erection of a pair of semi-detached villa residences, on the Rainsford-road. Mr. F. Whitmore, architect:—

Beckett Bros	£774		W. Samms £709
J. Gowers	748		H. Potter 691
J. L. Near	736		H. Kennell 689

DEAL.—For the construction of a roof; alterations to bandstand, &c., South-street, for the Corporation. Mr. Thos. C. Golder, Borough Surveyor, Deal:—

F. Collyer.....	£142		R. W. Hayman, Water-street, Deal* £139

*Accepted at £124.

DOVER.—For the erection of business premises, Biggin-street, for Mr. John Davis. Messrs. Fry & Gardener, architects, Cannon-street, Dover. Quantities by architects:—

Hayward & Paramour....	£4,992		Bromley £3,969
W. & S. Denne	4,861		Lewis & Son 3,962
Richardson	4,222		Adcock 3,938
Hall.....	4,086		Stiff, Dover (accepted).... 3,900
Austen & Lewis.....	3,972		Davis & Leaney..... 3,692

GAINSBOROUGH.—For the erection of new malting premises at Gainsborough, for Messrs. Sandars & Co. Messrs. Inskipp & Mackenzie, architects, 5, Bedford-row, W.C. Quantities by Messrs. R. L. Curtis & Sons, 119, London Wall, E.C.:—

W. Pattinson & Son	£9,850		H. Arnold & Son, Doncaster* £9,625
Frank Pattinson	9,380		
W. Wright & Son.....	9,296		

*Accepted.

GRIMSBY.—Accepted for the erection of an ice factory, boiler-house, &c. Messrs. Freeman, Son, & Gaskell, architects, 11, Carr-lane, Hull:—

Messrs. Hewins & Goodhand, Grimsby £8 000 0 0

HENDON (Middlesex).—Accepted for redrainage, and strengthening roof, &c., at St. Ann's, Hendon. Mr. George Hornblower, architect, 20, Fitzroy-street, W.:—

William Tout, Hendon (accepted) £220 10

HEREFORD.—Accepted for the erection of a villa residence in Cantilupe-street. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford:—

W. Rowberry £750

HEREFORD.—For the erection of a block of artisans' dwellings in Barton-road, for Mr. Henry Evans. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford:—

Morris & Son	£1,988	10	W. Powell £1,337 0
R. Taylor.....	1,565	0	Chas. Cooke 1,265 0
E. W. Wilks	1,430	0	Jos. Mason, Hereford* 1,075 0

*Accepted.

HOVE (Sussex).—Accepted for the supply of granite road metal for twelve months, for the Town Council:—

	Broken Granite.	Granite Spalls.
A. & F. Manuelle, 101, Leadenhall-street, London.....	Per ton. 11 2	Per ton. 7 10

HUCKNALL TORKARD (Notts.).—For additions to a cigar factory, for Mr. R. J. Dexter. Mr. A. H. Goodall, architect, Market-street, Nottingham. Quantities by architect:—

J. Oscroft.....	£1,711	0	W. Maule £1,470 0
T. Cuthbert	1,640	0	G. A. Pillatt 1,450 0
L. Green.....	1,556	10	J. Dove 1,400 0
Appleby & Lambert ..	1,480	0	J. A. Munks, Huchnall Torkard (accepted).. 1,396 0
J. Cooper	1,474	0	

HUNSTANTON (Norfolk).—For erecting two semi-detached residences. Plans, specifications, and quantities by Messrs. George Fitt & Co., 1, Queen-street, Norwich :—

C. Fryer	£1,090	J. Nelson, Hunstanton*	£750
S. Hipwell	973	* Accepted.	

ILFORD.—Accepted for new stabling at the "Rose & Crown" public-house, Ilford, Essex. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C. :—

W. Chopping £210

KINGSBURY (Middlesex).—For rebuilding Fairfields, Kingsbury, Middlesex. Mr. George Hornblower, architect, 22, Fitzroy-street, W. Quantities by Mr. George Fleetwood, F.S.I. :—

William Tout	£2,390		
Thomas Turner, Limited, Watford (accepted)	2,259		

LEYTONSTONE.—For alterations and additions to the "Colegrave Arms" public house, Cann Hall-road, Leytonstone, E., for Mr G. Morley. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

W. G Maddison	£2,284	W. Watson	£2,167
W. Shurmur	2,184	G. & H. Cocks*	2,149
A. E. Symes	2,170	* Accepted.	

LLANDAFF.—Accepted for forming and ballasting roads, sewers, surface drains, &c., near Llandaff Station, for Mr. J. H. Westye Evans. Mr. C. Telford Evans, architect and surveyor, 8, Queen-street, Cardiff :—

Eli Rees, Whitchurch, Cardiff £234 16 8

LONDON.—For the erection of residential flats, Green-street, Park-lane, for Mr. R. Fleming. Messrs. Henry S. Legg & Son, architects, Christ's Hospital. Quantities by Mr. A. V. Edlin :—

Mowlem & Co.	£13,982	Colls & Son	£12,998
Holland & Hannen	13,475	Patman & Fotheringham	12 953
Dove Bros.	13-335	Bywaters & Sons*	12,847
Perry & Co.	13,080	* Accepted.	

LONDON.—For rebuilding 7, Upper Wimpole-street, for Mr. Lewis W. Thomas. Mr. C. H. Worley, architect. Quantities by Mr. R. C. Gleed :—

	Main Building.	Sanitary Work.	Total.
Boyce	£3,599	£335	£3,925
Lawrance	3,590	289	3,879
Stevens	3,578	275	3 853
Ccurtney & Fairbairn	3 475	483	3,958
Downs	3,380	249	3,635
Webber	3,339	232	3 571
Fleming	—	375	—
Beattie	—	288	—

LONDON.—For the erection of Free Library, also additions to Vestry-hall, Haverstock Hill, for the Hampstead Vestry. Mr. C. H. Lowe, Surveyor, Vestry-hall, Haverstock Hill, N.W. :—

Branch Library.

Yerbury & Sons	£2,390	Ballard, Limited, Child's Hill (accepted)	£1,847
Gould & Brand	2,075		

Vestry Hall Additions.

W. A. Hudson	£1,682	Ballard, Limited, Child's Hill*	£1,397
Yerbury & Sons	1,631		
Gould & Brand	1,503	* Accepted.	

LONDON.—For erecting nine houses in Gonington-road, Greenwich, for Messrs. F. & E. Stanton. Mr. Thomas Dinwiddy, architect :—

Thomas D. Leng	£2,583	W. Mills	£2,241
Jones & Groves	2,420	E. E. Wood*	2,238
R. Soper	2,340	* Accepted.	

LONDON.—For alterations and additions to the "Duke of Edinburgh" tavern, Ferndale-road, Brixton. Messrs. F. J. Eedle & Meyers, architects :—

Antill & Co.	£2,120 0	A. Tillotson (accepted)	£1,770 13
Pritchard & Renwick	1,818 0	Spencer & Co.	1,765 0
Dearing & Son	1,794 0	Edwards & Medway	1,717 0

LONDON.—Accepted for various repairs and decorations at 2, Dyer's-buildings, Holborn, W.C. Mr. Herbert Riches, architect, 3, Crooked-lane, London, E.C. :—

Hawtrey & Son £165

LONDON.—For external varnishing to the houses and buildings of the Licensed Victuallers' Asylum, Old Kent-road, S.E.; also painting and decorating Board-room, &c., and for general repairs. M. W. F. Potter, architect. Quantities prepared by Mr. C. R. Griffiths, 31, Furnival-street, Holborn, E.C. :—

W. Palmer	£682 10 0	R. J. Young	£481 7 1
Robertson & Grant	570 0 0	S. Haysworth & Sons	415 0 0
H. Eames	545 17 0	F. Dawes, Peckham Rye (accepted)	336 0 0
W. Smith	567 0 0		

LONDON.—For the erection of new premises at Carmelite-street, E.C., for the National Press Agency. Mr. Edwin T. Hall, architect, 57, Moorgate-street, E.C. Quantities by Messrs. Evans & Deacon, 1, Adelaide-street, W.C. :—

Patman & Fotheringham	£9,392	Leslie & Co., Ltd.	£8,961
Cubitt & Co.	9,337	Holliday & Greenwood	8 949
Lawrance & Sons	9,259	H. J. Williams*	8,875
Foster & Dickson	8,998	* Accepted.	

LONDON.—For redecoration of Presbyterian church, Colebrooke-row, City-road, Islington, for the Church Committee, under the superintendence of Messrs. William Eve & Son, 10, Union-court, Old Broad-street, E.C. :—

Campion	£334	Small	£269
Rhodes	325	Brown, Stoke Newington*	262
Emmett	278	* Accepted.	

LONDON.—For new north wing to Parkfield Ladies' College, High Barnet, N. Mr. G. Baines, architect, Clement's-inn, Strand, W.C. :—

G. Wade	£1,154	W. Sumner & Co.	£998
J. Childs	1,067	W. Pavey & Sons	989
W. Tout	1,064	E. J. Cridlan & Co.	978
Thompson & Beveridge	1,021	J. Willmott & Sons, Hitchin	
Wilkinson & Sons	1,015	& Hornsey	895

[Accepted with modifications at £847 10s.]

LLANHILLETH (Mon.).—Accepted for the erection of twenty-five houses at Llanhilleth, Mon. Mr. C. Telford Evans, architect and surveyor, 8, Queen street, Cardiff :—

[B. Evans, 41, The Walk, Cardiff] £3,250

NORTHAMPTON.—For alterations, &c., to the Technical Schools, for the Governors of the Northampton and County Modern and Technical School. Mr. W. Hull, architect, 12, St. Giles's-street, Northampton. Quantities by the architect :—

R. Cosford	£712	J. T. Wingrove	£577
A. P. Hawtin	680	G. Branson, St. Mary's-street*	550
W. Agutter	610	G. Souster	559
J. Dunkley	603	J. Woodford & Son	520
H. Martin	594	* Accepted.	
W. Beardsmore	582		

NOTTINGHAM.—For extension to Beech Avenue Workhouse, New Basford, Nottingham, for the Nottingham Board of Guardians. Mr. A. H. Goodall, architect, Nottingham :—

J. Cooper	£7,470	H. Vickers	£6,520
Y. Fish & Son	6,914	Dennett & Ingle	6,260
A. B. Clarke	6,651	W. Maule	6,222
F. Messom	6,599	J. H. Vickers, Ltd.	6,174
E. Hind	6,527	J. Shaw (accepted)	5,889

[All of Nottingham.]

NOTTINGHAM.—For alterations, &c., to Harrison's Factory, Great Freeman-street, Nottingham, for the Nottingham Board of Guardians. Mr. A. H. Goodall, architect, Nottingham :—

F. Messom	£2,179	J. H. Vickers, Ltd.	£2,034
T. Barlow	2,114	E. Hind	1,924
T. Fish & Son	2,674	G. A. Pillatt	1,890
J. J. Adams	2,673	Dennett & Ingle, Nottingham (accepted)	1,880
H. Vickers	2,050		

[All of Nottingham.]

NOTTINGHAM. — For alterations and additions to the Mechanics' Institution, Nottingham. Mr. A. H. Goodall, architect, Nottingham :—

F. Messom	£1,915	J. Shaw	£1,625
T. Fish & Son	1,898	G. A. Pillatt	1,638
H. Vickers	1 74	E. Hind	1,610
J. J. Adams	1,673	Dennett & Irgle (accepted)	1,520

[All of Nottingham.]

OULTON BROAD (Suffolk).—For the erection of boarding-house. Messrs. G. Fitt & Co., architects, 1, Queen-street, Norwich. Quantities by architects :—

E. West	£1,027	J. Hurn, Surrey-road, Norwich (accepted)	£877 10
S. Hipwell	895		

ROMFORD (Essex).—For the execution of drainage works, Warley Peninsula, near Brentwood, for the Rural District Council. Messrs. Brundell, Simmons, & Brundell, engineers, 1, Princes-street, Doncaster :—

John Burrill	£4,698 0 0	Robert Stroud, Ilford*	£2,755 14 0
Joseph Jackson	2,945 0 0	James Dickson	2,739 10 8
George Double	2,927 7 6	Thompson & Cox	2,702 0 0
John Jackson	2,860 0 0	* Accepted.	

ROSS (Herefordshire).—For the construction of 600 yards of 9 in. pipe sewers, with manholes, &c., on the Ashfield Park Estate, for Mr. John Hart. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford :—

J. B. Kemp & Son	£181 10	W. C. Taylor*	£160 0
		* Accepted.	

SALISBURY.—For the erection of a pair of semi-detached cottages, Salisbury School Estate, for the Rev. J. C. Alcock. Messrs. John Harding & Son, architects, 51, Canal, Salisbury :—

Wort & Way	£759 19	C. Green	£650 0
E. Hale	745 0	E. Day	660 0
Webb & Co.	730 0	Vincent & Folland, Salisbury (accepted)	645 0
H. Hoskings	725 0		

SOUTHAMPTON.—For covering two service reservoirs, Southampton Common, for the Corporation. Mr. Wm. Matthews, Waterworks Engineer, Municipal Offices, Southampton. Quantities by Messrs. Hubred & Taylor, Southampton :—

W. Stokes	£8,920	Playfair & Toole	£6,284
Dyer & Son	7,114	Saunders & Co.	6,200
Cooke & Co.	6,970	F. Osman	5,997
Jenkins & Sons	6,485	Roe & Grace, Southampton*	5,953
Stevens & Co.	6 387	* Accepted.	
F. Reeks	6,350		

WALSALL.—For providing and laying 10,000 square yards limestone asphalte, &c., for the Corporation. Mr. R. H. Middleton, Borough Surveyor, Bridge-street, Walsall. Quantities by Borough Surveyor :—

Asphaltic Limestone Concrete Company, 121, } Schedule
Colmore-row, Birmingham ..... } of Prices.

WESTON-SUPER-MARE.—For the erection of van-house and furniture stores, Great Alfred-street, for Messrs. Lalonde Bros. Messrs. Price & Wooler, architects, Weston-super-Mare :—

L. Gibbs & Son	£643 12	Charles Taylor, Stafford-road (accepted)	£629 0
W. H. Shorney	620 0		

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C. J. (Below our limit).—S. S.—M. & F. (Amounts should have been stated).

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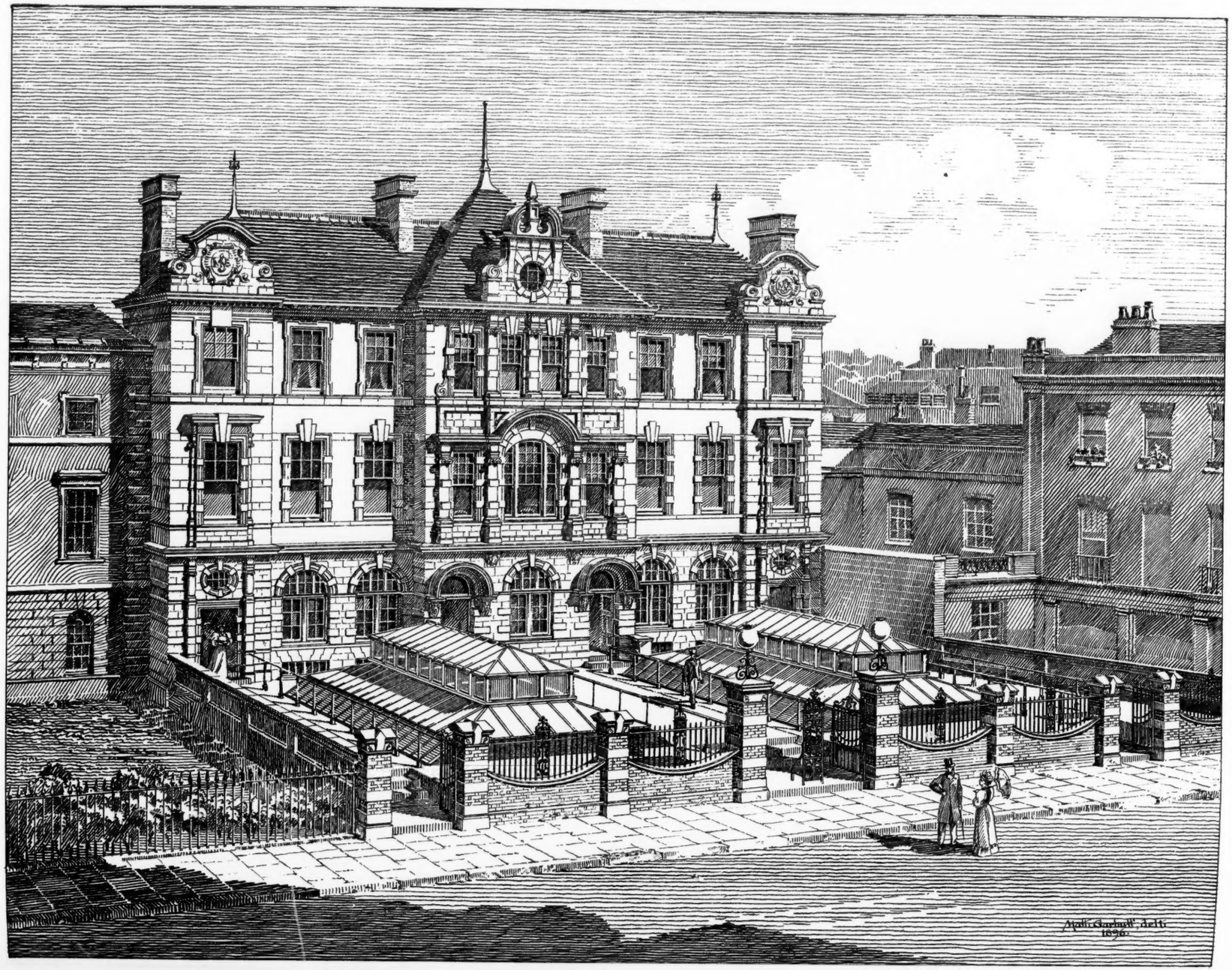
THE MEMORIAL CHURCH AT BORKI (RUSSIA).—M. ROBERT MARFELD, ARCHITECT.
EXTERIOR VIEW.

SCULPTURED PANELS FOR COUNTY HALL, STAFFORD.—Mr. F. E. E. Schenck, Sculptor.



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S. MARYLEBONE PUBLIC BATHS.—MR. A. MARSH SNELL, F.R.I.B.A., ARCHITECT.

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NEW BANK, LEICESTER.—Messrs. Goddard, Paget & Goddard, Architects.

SCULPTURED PANELS FOR COUNTY HALL, STAFFORD.—Mr. F. E. E. Schenck, Sculptor.

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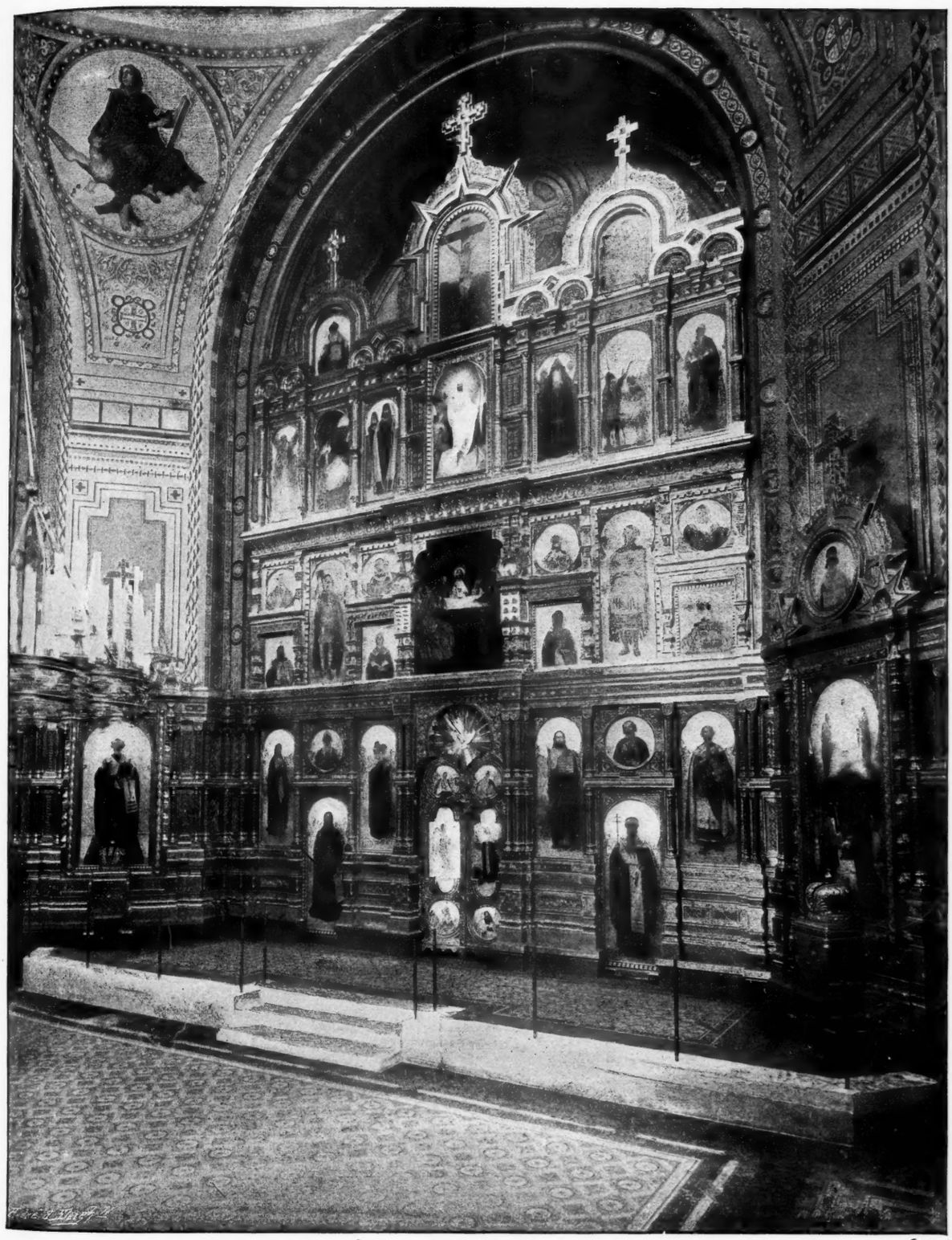
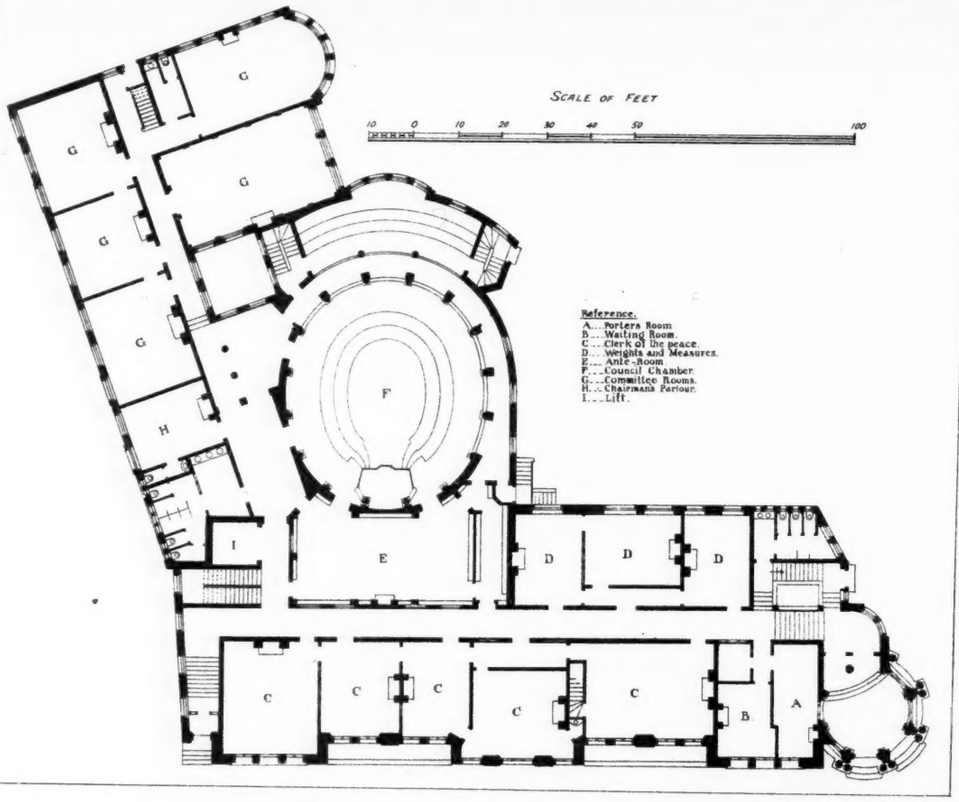


THE MEMORIAL CHURCH AT BORKI (RUSSIA).—M. ROBERT MARFELD, ARCHITECT.
INTERIOR, SHOWING THE ICONOSTASIS



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[illegible]M COUNTY [illegible]NCIL OFFICES.—By Mr E. R. Robson, F.R.I.B.A